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To AUTHORS: Articles covering not more than ten printed pages of the JOURNAL are preferred. However, when space permits longer articles will be used, though they may have to wait their turn longer. Those submitted by members of the association will also naturally be given preference as to time of appearance, though studies from non-members are not only welcome but solicited and will, of course, be preferred where obviously superior. For it must remain the policy of the JOURNAL and ASSOCIATION to foster everything that will advance the field, and be in the best interest of those whose speech, voice or hearing need our services.

Scientific studies, including those dealing with therapy or treatment procedures, have from the beginning been the type solicited, and those accompanied by objective evidence will always be given preference over the purely discursive or empirical.

Articles submitted from abroad will be published in French, German, Italian or Spanish—the language of the author. But they must be presented as good clear typewritten copy, for it takes too long to return proof to such authors for correction and the printer must be considered since he has to set type letter by letter.

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✝ CARL STUMPF ✝

M. Nadoleczny, M. D.,
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Am zweiten Weihnachtstage 1936 ist Prof. Dr. phil., Dr. med. e. h. Carl Stumpf im 89. Lebensjahr verschieden, der grosse "philosophische Psychologe," von dem sein Schüler Wolfgang Köhler sagen durfte, die Psychologen der Gegenwart weit über Deutschlands Grenzen hinaus hätten ihn als ihren Mentor betrachtet. Das wird auch heute mit der Einschränkung auf die anerkannten Vertreter der Wissenschaft noch gelten.

C. Stumpf wurde am 21. April 1848 in Wiesentheid in Unterfranken als Sohn eines Arztes geboren. Der ursprüngliche Plan, Jurist zu werden, um daneben Zeit zur Entfaltung seiner bedeutenden musikalischen Anlagen zu haben—er besass das sog. "absolute Tongehör (das absolute Tonbewusstsein) und hat schon in der Jugend Kammermusik geschrieben—, wurde sogleich fallen gelassen als Franz Brentano, damals Würzburger Dozent für Philosophie, den Studenten in seinen Bannkreis zog. Brentanos Psychologie vom empirischen Standpunkt wurde für Stumpf richtunggebend. Nach der Promotion des 20-Jährigen 1868 mit einer Arbeit "über das Verhältnis des Platonischen Gottes zur Idee des Guten" entschloss er sich—man könnte sagen: folgerichtig—zu einem Aufenthalt in einem katholischen Priesterseminar. Bald aber führte ihn der innere Kampf um ethische und philosophische Ideale aus der konfessionellen Enge heraus. Es folgt die Habilitation 1872. Die Schrift "über den Ursprung der Raumvorstellung" hält Lotze für bedeutend genug, um ihr einen 10 Seiten langen "Anhang" beizufügen. W. Köhler nennt sie "ein schönes Beispiel für den Scharfblick, durch den äusseren Anschein hindurch zur Sache." Zwei Jahre später wird der 25-Jährige an Stelle seines Lehrers Brentano nach Würzburg berufen und in rascher Folge nach Prag, Halle, München und 1894 nach Berlin.

Der Meilensteine auf seiner langen wissenschaftlichen Laufbahn gibt es verhältnismässig nicht allzuviele, aber sie sind um so bedeutsamer. Er wurde der eigentliche Begründer der "Tonpsychologie" und der vergleichenden Musikwissenschaft. Das grundlegende Werk (1883–1890) ist heute noch in der Hauptsache massgebend.

Der erste Band geht noch nicht auf eigentlich musikalische Probleme ein, sondern behandelt die Sinnesurteile im allgemeinen, die Beurteilung auf einander folgender Töne (Höhe, Tiefe, Stärke) und schliesst mit den individuellen Indispositionen und der Frage nach der Scharfhörigkeit der Musiker. Der 2. Band handelt von der

Beurteilung gleichzeitiger Töne, insbesondere von der Tonverschmelzungstheorie, vom Analysieren und Heraushören, von Qualitätsurteilen über zusammengesetzte Klänge und deren Teile, schliesslich von Geräusch und Klangfarbe. Stets geht der Autor darauf aus, die aktiven höheren Funktionen des Seelenlebens zu berücksichtigen namentlich bei der Lehre von der Konsonanz und Dissonanz. Nach Stumpf beruht die Konsonanz auf einem aktiven positiven Verschmelzung prozess der Töne, nicht einfach auf einer durch das Fehlen von Schwebungen charakterisierten Gegebenheit (Helmholtz) Daran schliessen sich die Beiträge zur Akustik und Musikwissenschaft" 1898–1913 und seit 1922 die "Sammelbände zur vergleichenden Musikwissenchaft" (mit E. v. Hornbostel). Der gebildete Laie sei auf zwei wertvolle und im besten Sinn belehrende Bücher aufmerksam gemacht: "Die Anfänge der Musik" 1911 und "Philosophische Reden und Vorträge" 1910. Der Ohrenarzt sei an die "Analyse geflüsterter Vokale" 1919, die "Tonlage der Konsonanten und die für das Sprachverständnis entscheidende Gegend des Tonbereiches" 1921, an "Phonetik und Ohrenheilkunde" 1925 (in Passows Beiträgen) erinnert; der Pädagoge an die erschöpfende Darstellung der "Methodik der Kinderpsychologie" 1900 und an die "eigenartige Sprachentwicklung eines Kindes," der Phonetiker noch an "Sprechen und Singen" 1923, die Untersuchungen "über Sprachlaute und Instrumentenklänge".

W. Köhler hatte den Satz aufgestellt, den Sprachlauten fehle gegenüber musikalischen Klängen die sinnliche Grundeigenschaft der "Tonhöhe" (nicht im physikalischen Sinne, sondern im Sinne von "musikalischer Qualität). Demgegenüber führt St. nochmals aus, dass wir beim Sprechen neben sprunghaften fortwährend stetige Tonveränderungen benützen, beim Singenprinzipiell nur Sprunghafte (feste Töne und Intervalle). Klangfarbenunterschiede dürften zum Teil auf Geräuschbeimengungen, zum Teil vielleicht auf stärkere Druck der Stimmlippen (nach Helmholtz) beim Sprechen beruhen. Auch die seelische Einstellung ist verschieden. Ausführlich beschäftigt sich St. mit den Übergängen und Mischungen von Singen und Sprechen, dem Parlando-Singen und dem singenden Sprechen, ersteres mit wenigen Intervallen, also einer gewissen Monotonie und hier und da gleitenden Tonbewegungen (auch beim Portamento), letzteres mit deutlich erkennbaren festen Tonhöhen, also stärker ausgeprägtem Tonfall (Sprachmelodie). Bei bewegten Tönen ist mit dem Höhenwechsel (Schwingungszahl "auch eine geistige Qualitätsveränderung ebenso integrierend verknüpft, wie es bei sprunghaften Tonveränderungen der Fall ist." Jedoch bemerkt sie nur ein sehr geübtes Ohr. Köhlers Ansicht wäre nur haltbar, wenn beim Sprechen ausschliesslich stetige Tonveränderungen, also keine Intervalle, vorkämen und wenn derartige stetige Veränderungen "mit musikalischer Qualität unverträglich" wären. Man kann also der Sprache nur feste musikalische Qualitäten aberkennen. Daher kommt St. zu dem Ergebnis, dass Sprache und Gesang sich nicht durch "irgendeine Grundeigenschaft, sondern nur gradweise" unter-

scheiden. "Der einschneidende Gradunterschied" beruht in der vielfachen Verwendung "stetiger Tonveränderungen" beim Sprechen gegenüber "diskreten Tonstufen" beim Singen, wo stetige Übergänge nur als Vortragsmodifikationen erlaubt sind. "Die Gefühlswirkungen der Sprache knüpfen sich gerade an stetige Tonveränderungen," bei sprunghaften stören Intonationsfehler nicht, die beim Singen sehr unangenehm wirken, weil "die musikalischen Gefühlwirkungen—an feste Intervalle fester Töne geknüpft sind." Am bekanntesten ist wohl Stumpf's Standarwerk die "Sprachlaute" das er als 79-Jähriger vollendet und "der Medizinischen Fakultät der Universität Berlin in Dankbarkeit gewidmet" hat. Im Vorwort dazu stehen die charakteristischen Zeilen: "Sollte dieses Buch philosophischen Kollegen in die Hände kommen, so werden wohl viele es bald kopfschüttelnd wieder aus der Hand legen. Es erhebt in dieser Richtung keine Ansprüche. Aber schliesslich kann der Philosoph aus allen Blüten Honig saugen, und mir ist es nun einmal gewiss, dass auch die hohe Königin der Wissenschaften niemals anders wahrhaft fortschreiten wird, als auf dem Wege vom Einzelnen zum Allgemeinen." Das ist im Geiste des grossen Thomas von Aquin geschrieben.

St. fasst in diesem inhaltsreichen Buch seine ausgedehnten, bisher zum Teil bekannten Forschungen über die Sprachlaute zusammen, vergleicht sie mit den bisherigen und kommt auf Grund grossangelegter Versuchreihen und sorgsamer Überlegungen im wesentlichen zu einer Bestätigung der Helmholtzschen Anschauungen. Seit dessen Lehre von den Tonempfindungen ist dieses Buch wohl das bedeutendste Werk, gleich wichtig für den Phonetiker, wie für den Ohrenarzt, und zwar nicht nur wegen der Stellungnahme zur Hörtheorie, sondern namentlich wegen der Theorie und Praxis der Hörprüfung (Obertöne der Stimmgabeln, Pfeifen, Obertonlosigkeit der menschlichen Pfeiftöne, Struktur der Sprachlaute u.a.m. Auf diesem Gebiet haben Stumpfs Arbeiten schon seit einigen Jahren befruchtend gewirkt.

Stumpf geht nur vom akustischen Standpunkt aus und bedient sich unter Verzicht auf graphische Methoden zur Untersuchung der Sprachlaute dreier subjektiver Verfahren: der Analyse mit resornierenden Stimmgabeln, der Analyse mittels Interferenzröhren und der Synthese auf gleichem Weg. Gartens diesbezügliche physikalische Bedenken werden berücksichtigt, aber nicht als ausschlaggebend betrachtet. "Alles kommt ja hier gerade auf das menschliche Ohr an." Es beginnt mit eigenen Versuchen zur Analyse der Vokale durch resonierende Gabeln und Interferenzröhren. Schon hier kommt St. zur Festlegung von Formanten im Sinne einer bestimmten Tonstrecke aus harmonischen Teiltönen, "die zur Charakteristik eines Vokals in besonderem Masse beiträgt," und innerhalb deren es ein (dynamisches) Formantzentrum gibt. Neben dem Hauptformanten fand er noch Nebenformanten, "die für den Vokalcharakter von Bedeutung sind." In der höheren Sopranlage werden die Vokale unkenntlich, weil die hellsten dabei ihren Unterformanten

verlieren und innerhalb der entscheidenden Gegend nur noch wenige, der Stärke nach nicht deutlich abgestufte Obertöne vorhanden sind. Der Abbau des stimmhaften Sprechens durchs Interferenzverfahren zeitigte im wesentlichen gleiche Ergebnisse. Auch die Struktur von Flüstervokalen zeigte gleiche Formanten und bei der Untersuchung der Konsonanten kam St. zu genauen Ergebnissen über deren Formanten, die er auch graphisch darstellt. Die Untersuchung der subjektiven Tonhöhe stimmloser Sprachlaute leht u. a., dass sich bei hellen Vokalen die Flüstertöne mit den Formantzentren der gesungenen Vokale decken, Sie fallen mit der Grundschwingung der durch das Flüstern angeblasenen Mundhöhle zusammen, bei U, O, A aber sind es die ersten Obertöne. St. erklärt diese als Überblasungsgeräusche. Bei Besprechung der Vokalsynthese aus reinen Tönen (gegenüber der Pseudosynthese aus Klängen unbekannter Zusammensetzung) weist Verf. auf die Entwicklung der Vokalforschungen und die erfreuliche Konvergenz ihrer Ergebnisse hin und kommt zum Schluss, dass Helmholtz durch seine Klanganalyse und—synthese die ganze Vokaltheorie auf die Grundlage gestellt habe, "von der sie sich nur zu ihrem Schaden zeitweilig entfernt hat. Nur beachte er zu wenig, dass nicht ein einzelner Ton, sondern eine Mehrheit gleichzeitiger Teiltöne formend wirkt, und dass auch das Formantzentrum notwendig Verschiebungen innerhalb einer gewissen Zone erleidet." Völlig verschiedene Untersuchungen gelangten in der Hauptsache zu gleichen Ergebnissen, weshalb St. "die Frage nach der akustischen Natur der Vokale als im wesentlichen gelöst" ansieht. Einen besonderen Abschnitt widmet er den phonographischen, telephonischen und ohrenärztlichen Beobachtungen, wobei er die neuesten Ergebnisse der Telephon—und Radiotechnik (Fletcher, K. W. Wagner, Trendelenburg) berücksichtigt, sowie die Arbeiten von Bezold, Claus, Gradenigo und Papale, Lampert würdigt. Bei der Systematik der Sprachlaute vom akustischen Standpunkt kommt er aus guten Gründen auf das Hellwag sche Vokaldreieck zurück (dessen Berechtigung von superklugen Auch-Phonetikern bestritten wurde, Ref.), das aber die Grundeigenschaften der Vokale: ihre vokale Sättigung, Helligkeit, Klangstärke, die objecktive Stärke des Grundtons, die Tonhöhe der Flüstervokale in anschaulicher Weise aufzeigt, also das "natürliche System" darstellt und auch zentralphysiologischen Prozessen entspricht. Im Kapitel über einheitliches und mehrheitliches Hören zeigt St., dass für einheitliches Hören (z.B. der Vokale) die Verschmelzung der konsonierenden (besonders der 6 tiefsten) Teiltöne nötig ist, ferner die reine Stimmung aller harmonischen Teiltöne, deren identische Ortlichkeit, genaue Gleichzeitigkeit, günstige Intensitätsverhältnisse unter ihnen, ferner eine besondere physiologische und psychologische Einstellung des Hörenden (Wille, Gewöhnung). Auch die gegenseitige Beeinflussung der Teiltonstärken und ihr Verhältnis zur Gesamtstärke des Klanges wird erörtert (Verschiebung zugunsten der jeweils tieferen Teiltöne beim Zusam-

menklang im Gehörorgan und im Gehirn). In Kapitel XIII und XIV: Psychophysik, Physik und Physiologie der Sprachlaute kommt Stumpf zu einer Zusammenfassung seiner Ergebnisse, die etwa folgendes lehrt:

Die Absoluttheorie, die feste Tonhöhen für die charakteristischen Teiltöne der Vokale annahm, hat im wesentlichen Recht behalten. Jedoch ist auch an der Relativtheorie, welche die Ordnungszahl der Teiltöne für wesentlich hielt, richtig, dass jedem Vokal gewisse (in allen Tonlagen wiederkehrende) Struktureigentümlichkeiten zukommen. Nichtgenaselte Vokale bestehen aus harmonischen Teiltönen, wovon die untersten und die der Formanten die wichtigsten sind. Die Lage des Maximus (Zentrums) verschiebt sich mit dem ganzen Formanten innerhalb bestimmter enger Grenzen (Formantgegend) bei aufsteigendem Grundton. Der Formant im weiteren Sinne ist unverrückbar; innerhalb seiner Zone verschiebt sich der Formant in engerem Sinne. Die Nebenformanten (Oberformant des U, Unterformanten der hellen Vokale) sind vom Hauptformanten durch "leere Tonstrecken" getrennt. Der Grundton der Vokale ist oft schwach oder er fehlt, wird aber als Differenzton der Obertöne subjektiv verstärkt. Den Hauptteil der physikalischen Klangenergie oder deren Höhepunkt enthält der Formant, Änderungen der Stärkeeinzelner Teiltöne innerhalb des Formanten verändert die Vokalfärbung. Jeder Vokal durchläuft im Ab- und Aufbau (Durch Interferenz der Teiltöne) Rückbildungs— und Entwicklungsstufen, die selbst wieder Vokale sind. Ab c^2 verlieren die Vokale mehr und mehr ihre Charakteristik und sind von c^3 an (hohes Sopran-c) ununterscheidbar. Auf tiefen Grundtönen werden sie undeutlich. Gesungene und gesprochene Vokale sind im Grunde nicht verschieden konstruiert, Die Köhler sche Annahme, wonach sich über die einfachen Töne zwischen g^1 und g^4 ein Spektrum von Vokalfarben legt, findet Stumpf berechtigt, im Sinne seiner Tonfarbenlehre. Neben Höhe und Stärke hätte jeder einfache Ton eine immanente (Psychologische) Farbeneigenschaft, woraus aber allein die empirischen kalcharaktere nicht verständlich sind.

Schliesslich bestätigt Stumpf auf Grund seiner Untersuchungen die Helmholtzsche physiologische Hörtheorie gegenüber der neueren Gestaltspsychologie, weil je den akustischen Tatsachen am besten entspricht. Sie ist aber durch die erwähnten Gesetzlichkeiten und die Tonfarbenlehre nach der psychologischen Seite hin zu ergänzen.

Im Anhang über Instrumentalklänge zeigt Verf. u. a. Wege, um den bisher empirischen Konstruktionen von Instrumenten wissenschaftliche Grundlagen zu schaffen.

Man muss beim Lesen dieses Buches stets festhalten, dass der Verfasser vom rein akustischen Standpunkt ausgeht, dass ihm der genetische Nebensache ist, und darf sich nicht wundern, wenn Ansatzrohr—und Kehlkopfphysiologie sowie mancherlei Medizinisches nur flüchtig gestreift wird oder unerwähnt bleibt.

Das Werk ist kein Buch, in dem man blättern, oder das man schnell durchlesen kann. Es muss ernsthaft durchgearbeitet werden. Am allerwenigsten aber wird man daraus zitieren dürfen, ohne es genau gelesen zu haben. Davor seit jetzt schon gewarnt, denn es liest sich nicht immer leicht.

Der Psychologe achtet und verehrt Stumpf neben Brentano als den Begründer der funktionspsychologischen Schule. ("Erscheinungen und psychische Funktionen" k. pr. Akad. d. Wissenschaften 1906.) Ihm ist der Schritt zur Überwindung der mechanistischen Assoziations-psychologie zu danken, indem er über die Erscheinungspsychologie (Empfindungen und Vorstellungen) hinaus eine Funktionspsychologie geschaffen und damit der Wissenschaft neue Wege gewiesen hat. Diese Funktionspsychologie vernachlässigt die Tatsachen der Empfindungs—und Vorstellungspsychologie (Erscheinungen oder Inhalte) durchaus nicht, erforscht aber die Akte oder Funktionen des Denkens, Fühlens und Wollens, die "den Kern des psychischen Lebens ausmachen." Einer der ersten, der die Tragweite des Stumpfschen Lebenswerkes erkannt hat, war Külpe, der von der Denkpsychologie her die Funktionslehre stützte und ausbaute. Die philosophische Auswirkung dieser Funktionslehre, die der späteren Phaenomenologie Husserls den Weg wies, kann hier nur angedeutet werden.

Die Bedeutung Stumpfs geht aber weit über die Einzelwissenschaft hinaus. Er ist einer der hervorragendsten induktiven Philosophen, der den Zusammenhang mit den Naturwissenschaften nie verloren hat. Er hat nämlich der überkommenen Wechselwirkungslehre, die eine kausale Betrachtung der Leib-Seelebeziehung unzulänglich vertrat und vom psychophysischen Parallelismus verdrängt zu werden drohte, den Doppelwirkungsgedanken ausgestaltend hinzugefügt: Neben dem physiologischen Geschehen kommt als Wirkung des Reizes der Bewusstseinsablauf zustande: der Grosshirnvorgang hat ausser der physischen auch eine psychische Wirkung jenseits des Naturgeschehens und des Erhaltungsgesetzes. Diese Lehre baute später E. Becher zur Doppelwirkungs-Doppelursachenlehre aus: Wirkungen des Psychischen auf Physisches im Sinne von reinen Richtungsänderungen d. h. ohne Energieveränderung.

Einer Gelehrtennatur, wie Carl Stumpf, waren äussere Ehren, die ihm ja im reichen Masse zuteil wurden—er ist 1929 zum Ritter des Ordens Pour le mérite für Wissenschaften und Künste ernannt worden—gleichgültig; aber gefreut hat es ihn doch, als der Bürgermeister von Wiesentheid im Jahre 1936 seinem hochbetagten Ehrenbürger das Geburtshaus und die Stätten seiner Jugend zeigte. Auf dem Rundgang durch das fränkische Städtchen fuhr ein junger Motorradler in die Gruppe der alten Herren hinein. Stumpf trug eine nicht unbedeutende Verletzung davon, die er aber trotz seines hohen Alters überstanden hat. Der berühmte philosophische Psychologe ein Opfer der motorrasenden Gassenjugend—fast wäre es ein trauriges Zeichen unserer Zeit geworden.

Der Versuch, den Altmeister der experimentellen Psychologie auch jenen menschlich näher zu bringen, die nicht das Glück hatten ihn zu kennen, sei hier noch an der Hand seiner eigenen Worte gewagt: "Philosophie soll uns, die dafür Empfänglichen, emporheben über den Dunstkreis der Erde, über die Nichtigkeiten des Alltagslebens, sie soll uns helfen, schwerem Geschick standzuhalten und in Zweifelsfällen den Weg der Pflicht zu erkennen." "Ich möchte vor allem für wichtig halten, dass der Philosoph irgendein Handwerk gelernt und geübt, d. h. sich auf irgendeinem konkreten Gebiete, sei's nun der Geistes—oder der Naturwissenschaften selbsttätig versucht habe." "Wie kann man hoffen, die Welt zu verstehen, ohne die Gesetze des Psychischen zu kennen, und wie kann man diese erkennen, ohne die Wechselbeziehungen des Psychischen und des Physischen zu berücksichtigen?' Wenngleich der ungehemmte Verlauf des Denkens und Wollens bei oberflächlicher Betrachtung die Täuschung erwecken mag, als hätten die organischen Prozesse daran keinen Anteil, so brauchen wir nur einen Blick auf die Störungen des Denkens, Sprechens, Fühlens, Wollens, der ganzen Persönlichkeit zu werfen, mit denen wieder erst die neuere Forschung uns vertraut gemacht hat." Dass ein Geist und ein Charakter wie Stumpf sich der Pflicht, Kritik zu üben, niemals entzogen hat, ist selbstverständlich; dass seine Art der Kritik sachlich, treffend, aber immer vornehm, sogar liebenswürdig gewesen ist, unterscheidet ihn von manchem Philosophen. Wie bescheiden und doch wie aufrecht klingen die Worte des 20-Jährigen im Vorwort zu seiner Dissertation: "In der Abhandlung wird dem ersten Blicke vielleicht die ausgedehnte Polemik gegen Forscher, denen Jeder und der Verfasser nicht am wenigsten Hochachtung und Dank schuldet, auffallend sein. Indes hoffe ich, dass Existenz und Haltung derselben einer Entschuldigung weder vor ihm noch vor Anderen bedürfen werde. Es schien mir geziemender, mit den bestehenden Ansichten Schritt für Schritt mich auseinander zu setzen als sie entweder gar nicht zu berücksichtigen oder gar nicht kennen zu lernen." Später in seiner Rektoratsrede 1907 sagt er: "Wer die Wissenschaft mehr liebt als den Ruhm, müsste einer"—auf Autoritätsglauben und Dogmatismus gegründeten—"Schulformation nach Kräften entgegentreten. Nur solchen wird die Verknüpfung der allgemeinsten Forschungsergebnisse immer leicht bleiben, die Verschiedenartiges, ja Unverträgliches sorglos zusammenmischen, nicht aber solchen, die in höchster Präzision und Folgerichtigkeit die Ehre des Philosophen erblicken." Ein Mann wie Stumpf durfte es sich erlauben, manchen Neukantianern ins Gewissen zu reden mit den Worten "man muss das historische System Kants, einschliesslich seiner Mängel und Unklarheiten, scharf trennen von dem, was man selbst daraus machen zu können glaubt." Im Jahre 1907 war es fast noch unzeitgemäss, den Materialismus eine "unphilosophische Strömung" zu nennen, "denn unphilosophisch ist der Materialismus immer, da er den Augenschein blindlings für wahr nimmt." Wie notwendig scheint uns auch heute noch und vielleicht gerade heute die Bemerkung aus der Rede "vom ethischem Skep-

tizimus" (1908): "und wenn Nietzsche, der Sprössling einer ungleichen Ehe zwischen Romantik und Darwinismus, von Herrenmenschen träumt, die hoch über der profanen Menge wie Häupter der Alpen ihre einsame Grösse geniessen, so ist dies auch mehr poetisch als psychologisch gedacht."

Auch dort, wo er missverstanden wurde, hat Stumpf sachlich und nachsichtig entgegnet. Das war z. B. in der für Leser dieses Journal wichtigen Frage des sog. Akkordhörens der Fall, einer Theorie, die auf fragwürdiger Grundlage eines—Musiklexikons die Wahrnehmung der Vokalstruktur bezeichnet hat. Dazu hat Stumpf in einer brieflichen Mitteilung vom 24. April 1930 noch Stellung genommen: "Akkorde heissen in der Musik Zusammenklänge von mindestens 3 von einander unterschiedenen, annähernd gleichstarken Einzelklängen, deren Grundtöne entweder unter sich konsonieren (Konkorde, Dur- oder Moll-Dreiklänge) oder durch Hinzufügung dissonanter Töne zu Dreiklängen entstehen (Diskorde). Ein einzelner Klang enthält bekanntlich meist schon eine Anzahl von Einzeltönen, die zu einander in denselben Verhältnissen stehen, wie die Töne von Akkorden. Aber sie sind nicht gleich stark und werden nicht von einander unterschieden. Deshalb wird niemand einen einzelnen Klarinettenklang als Akkord bezeichnen. Andererseits ist auch eine Oktave oder eine Quinte nicht schon ein Akkord; es müssen mindestens drei unterschiedene Töne vorliegen. Einen Vokal würde ich darum gleichfalls nicht als Akkord bezeichnen aus dem dreifachen Grunde, weil die Teiltöne, obgleich sie in harmonischen Verhältnissen stehen, nicht unterschieden werden, weil sie nicht annähernd gleich stark sind und weil auch Vokale aus nur 2 Tönen vorkommen (Sprachlaute S. 195). Nur soviel ist wohl zuzugeben, dass ein Abglanz des rein sinnlichen Wohlklanges, welcher den Durakkord auszeichnet, auch den Vokalen eigen ist, unter deren Teiltönen die Verhältnisse 4 : 5 : 6 vorkommen. Denn diese rein sinnliche Wirkung scheint nicht an die Unterscheidung der drei Töne geknüpft zu sein." Nur wenn die Wissenschaft zu selbstsüchtigen Zwecken der Propaganda missbraucht wurde, wenn unehrliche Personen mit unwahren Behauptungen öffentliches Aufsehen erregen wollten, konnte auch Stumpf deutlich und scharf werden. Man lese seine Ausführungen in der Zeitschrift der internationalen Musikgesellschaft 1904 H. 11.

Wer als Schüler zu Füssen Carl Stumpfs gesessen hat, wird Zeit seines Lebens den Eindruck des klaren scharfen Denkers, des strengen aber gütigen und nachsichtigen Lehrers, des bescheidenen und grossen Gelehrten nicht vergessen. Dieses Erlebnis ist mit einem Gefühl der Ehrfurcht gepaart, jener Ehrfurcht, die am Ende des vorigen Jahrhunderts die studierende Jugend mit innerer Überzeugung und mit Recht ihren Lehrern an der universitas magistrorum et scholarium entgegenbringen durfte, jener Ehrfurcht, die Stumpf selbst vor der Wissenschaft hatte, und von der Goethe sagt, sie "würde, wenn sie durch ein Wunder augenblicklich in allen Menschen hervorträte, die Erde von allen den Übeln heilen, an denen sie vielleicht unheilbar krank liegt."

Und mit Ehrfurcht möge der Leser die Worte Stumpfs aus seiner Doktoratsrede über die Wiedergeburt der Philosophie (15 October 1907) in sich aufnehmen:

"Aber die Palme menschlicher Geistesarbeit harrt noch des Siegers. Es gälte eine die Natur- und Geisteswissenschaft gleichmässig durchdringende Ideenwelt zu schaffen, die mit sachlicher Überzeugungskraft die weitesten Kreise der Forscher bezwänge und durch sie die gebildete Menschheit überhaupt mit neuem Leben erfüllte. Dies könnte nur einem königlichen Genius gelingen, wenn er noch irgend möglich ist, der Leibnizens mathematisch-physikalische Begabung, die unbegrenzte Weite seiner Interessen, die durchsichtige Klarheit seiner Gedankenbildung mit Kants bohrendem Tiefsinn und ethischem Pathos vereinigte. Hoffen wir, dass ein solcher Genius komme, und dass es wieder unserem deutschen Volke beschieden sei, ihn hervorzubringen. Hoffen wir aber auch dass, was immer die Zukunft bringen möge, sie uns dreierlei nicht nehme: Die Einigkeit unter den Nationen, die zu gemeinschaftlicher Geistesarbeit berufen sind, die Einfalt des Sinnes, ohne die auch Schlangenklugheit nicht zur Wahrheit führen kann, und die Freiheit wissenschaftlicher Forschung und Lehre, die keine Wissenschaft so unbedingt und rückhaltlos beanspruchen muss, wie die Philosophie."

An English translation of most of the article above follows.

Among the most outstanding of the many students of Carl Stumpf in the United States are our own colleague in the speech correction field, Dr. Max Meyer, now of Florida, and Dr. George Arps, dean of the graduate school of Ohio State University, Columbus, Ohio.

DEATH OF CARL STUMPF

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(English Translation)

Professor Carl Stumpf, Ph. D., Hon. M. D., died on Boxing Day, 1936, in his 89th year. The son of a physician, he was born on April 21st, 1848, at Wiesentheid in Lower Franconia. At first he intended studying law, hoping to find time for the development of his musical talents, as he went along. He was gifted with an ear for absolute pitch, and in his youth even wrote chamber music. This plan was dropped when he came under the spell of Franz Brentano, then professor of philosophy at the University of Würzburg, whose empirical viewpoint shaped the young man's outlook.

He was the great "philosophical psychologist" of whom his pupil, Wolfgang Köhler, truly said that psychologists all over the world looked upon him as their mentor. The recognized representatives of our science still do so.

In 1868, at the age of twenty, he took his degree with a thesis on the "Relation of the Platonic God to the Idea of the Good." His next, one might almost say logical, step was to enter a Roman Catholic seminary. But his mind soon burst the trammels of theology. In 1872 he qualified for a lectureship with a treatise on "The Origin of the Space Concept" which Lotze considered worthy of a ten-page appendix. W. Köhler calls it a fine example of that clear-sightedness which perceives reality behind its semblance.

Two years later, when only twenty-five, Stumpf was called to the chair of his former teacher Brentano. Prague, Halle, Munich, and Berlin (1894) marked the further stages of his career.

He was never a voluminous writer, but what he wrote has left its mark. In him we see the true founder of the Comparative Science of Music and Sound. We still acknowledge the leading principles of his standard works (1883 to 1890).

The first volume does not enter upon musical problems, but treats of the judgment of the senses, of the sequence of sounds (pitch, strength), of individual disposition, and the acuteness of hearing in musicians. The second volume deals with synchronous sounds (especially the theory of sound-linking), with analysing and detecting, with the judgments on the quality of composite tones and their parts, finally with noise and tone-color. He always keeps in mind the higher active functions of the soul, especially as to consonance and dissonance. According to Stumpf consonance is due to an active and positive linking of sounds, and not simply to a condition characterized by absence of tremor (Helmholtz).

Then follow the "*Beiträge zur Akustik und Musikwissenschaft*" (Acoustics and Musical Science) 1898 to 1913, and from 1922 onward

the "*Sammelbände zur Vergleichenden Musikwissenschaft*" (Comparative Musical Science) in collaboration with E. V. Hornbostel. Intelligent laymen will find much to interest them in two valuable and really instructive books: "*Die Anfänge der Musik*" (Origins of Music) 1911, and "*Philosophische Reden und Vorträge*" (Philosophical Lectures) 1910.

The ear specialist will consult the "*Analyse geflüsterter Vokale*" (Analysis of Whispered Vowels) 1919, the "*Tonlage der Konsonanten ünd die für das Sprachverständnis entscheidende Gegend des Tonbereiches*" (Compass of the Consonants, and the Region most important for the Understanding of Speech) 1921; "*Phonetik und Ohrenheilkunde*" (Phonetics and Otology) 1925 in Passow's *Beiträge*. Teachers will turn to the exhaustive "*Methodik der Kinderpsychologie*" (Method of Child Psychology) 1900, and the "*Eigenartige Sprachentwicklung eines Kindes*" (Characteristic Development of Speech in a Child).

The student of phonetics should read "*Sprachlaute und Instrumentenklänge*" (Sounds of Speech and Instruments) as well as his "*Singen und Sprechen*" (Singing and Speaking) 1923. W. Köhler once wrote that sounds of speech lacked the sensorial quality of pitch when compared with sounds of music, "pitch" in this case is not to be understood as in physics, but as a "musical quality." Stumpf, however, insists that in speaking we use steady as well as irregular changes of tone, whereas singing proceeds in jumps only (fixed notes and intervals). Difference of tonality may partly be due to the admixture of noises, partly to stronger pressure on the vocal chords (Helmholtz). The varieties of soul-adjustment have also to be considered.

Stumpf enlarges upon the transitions and interminglings of song and speech, such as *parlando* singing and singing talk. The former shows few intervals, hence a certain monotony with gliding notes here and there, as also in the *portamento*. In the latter we discover notes of fixed pitch, that is to say a more pronounced modulation (melody of speech).

In moving sounds the change of pitch (frequency) "is essentially bound up with a steadily progressive change of quality, and that just as much as in jumpy changes of tone." Only a highly-trained ear will perceive this, however. Köhler's view would be tenable only, if speech produced nothing but uniform changes, that is to say, if intervals were absent, and if such uniform changes "were irreconcilable with musical quality." Hence, according to Stumpf, speech merely lacks fixed musical qualities and the difference between speaking and singing "is purely a matter of degree, and not due to some fundamental quality." Therefore "the decisive difference in degree" lies in the manifold use of "steady changes of tone" in speech as against "discrete pitches" in song where steady transitions are permissible only for the varieties of interpretation.

Stumpf's world-wide fame rests upon his standard work on the "*Sprachlaute*" (Sounds of Speech) completed in his 79th year and

"gratefully dedicated to the Medical Faculty of Berlin." The introduction has this characteristic passage: "Should my book fall into the hands of philosophical colleagues, they may soon lay it aside with a shake of the head. Let me say that it makes no pretensions. But after all the philosopher can suck honey from any kind of flower, and I feel sure that even the queen of the sciences cannot proceed otherwise than from the particular to the general." That surely breathes the spirit of the great Thomas of Aquino.

Readers of the book must keep in mind that Stumpf is primarily concerned with the acoustic side of phenomena, and less so with their genetics. Voice production, the physiology of the larynx and sundry medical aspects are only mentioned by the way, or not at all.

It is certainly not a book for quick perusal or occasional gleaning, for it demands serious concentration. Not being an easy book, it should not be quoted without careful study of the context.

Stumpf's importance transcends the narrow confines of our science. He belongs to those eminent inductive philosophers who never lose contact with the physical sciences. The traditional theory of reciprocal action accounted but inadequately for the causal relations between body and soul. When it threatened to be replaced by psychophysical parallelism, he improved it by adding his idea of double action. The conscious process is induced by the sensations of physiological events. Whatever happens in the cerebrum is not only followed by physiological effects but also by psychical effects which transcend natural phenomena and the law of preservation.

Psychologists venerate Stumpf together with Brentano as the founder of the school of functional psychology ("*Erscheinungen und Psychische Funktionen.*" K. Preuss. Akad. d. Wiss. 1906). It was he who broke loose from the mechanistic psychology of associations. Going beyond phenomenal psychology (perceptions and concepts) he created a functional psychology which gave science a new perspective. This functional psychology does not neglect the facts of perceptual and conceptual psychology (phenomena or contents), but explores the acts or functions of thought, feeling and will which "constitute the core of psychical life." Külpe was among the first to perceive the significance of Stumpf's life-work which he amplified in his psychology of thought. We can here no more than hint at the philosophical consequences of this functional theory which pointed the way to Husserl's phenomenology.

Out of this E. Becher elaborated his theory of double effect—double cause. The psychical sphere induces changes of direction in the physical sphere without causing changes of energy.

In 1929 Stumpf was invested with the order of *Pour le Mérite*, the highest Germany could bestow in the realms of science and art. But although the savant did not attach undue importance to outward honors, he felt glad at heart when in 1936 the Mayor of Wiesentheid received the venerable Freeman of the City and showed him round the scenes of his youth. In one of the streets a motor cyclist ran into the group of visitors. Stumpf suffered serious injuries which, how-

ever, he survived in spite of his great age. What a sign of the times—the famous psychologist and philosopher a victim of speed-mania.

Let us quote from the works of the past-master and senior of experimental psychology in order to bring him humanly nearer to those who did not know him personally:

"Philosophy lifts its adepts above the earthly murk and the vanities of life so that they may take comfort in adversity and know the path of duty when in doubt." * * * "I have always held that the philosopher should be versed in some sort of handicraft or concrete science so as to be capable of systematic work." * * * "How could we hope to understand the world without knowing its psychical laws; and how can we know these without the reciprocal relations between the physical and the psychical? Although superficially the progress of thought and will may seem to be independent of organic processes, we have only to look at the disturbances of thought, speech, feeling, will, and indeed of our whole individuality, as disclosed by recent research."

It goes without saying that a man like Stumpf never shirked the duty of criticism. But objectivity, sureness of aim, fairness and amiability distinguish his critical style from that of many philosophers. At the age of twenty he wrote in the introduction to his treatise: "From the outset the reader may be struck by extensive criticism of scientists to whom the author, like everybody else, owes nothing but esteem and gratitude. I trust, however, that the manner relieves me of the necessity of excusing the matter. I thought it more seemly to discuss current views instead of ignoring them."

In his rectorial address of 1907 he says: "Whoever loves science better than fame, should vigorously oppose the formation of schools founded on dogmatism and belief in authority. The linking of general scientific results is easy, if one merely mixes diverse and even incompatible things. It is difficult for those who honor philosophy by precision and logical consistency."

A man like Stumpf was well qualified to take some of the Neo-kantians to task with words like these: "Kant's historical system with all its faults and obscurities should be kept strictly apart from what anyone of us should like to make of it."

In 1907 it was still almost premature to call materialism an unphilosophical tendency. "For materialism is always unphilosophical because it believes in the truth of what the eye can see."

In his Discourse on Ethical Scepticism (1908) there occurs a passage which our present generation might ponder: "When Nietzsche, the fruit of a misalliance between romanticism and Darwinism, dreams of supermen who, akin to Alpine peaks, soar in solitary grandeur above the profane multitude, poetry is more likely to have sponsored the idea, than psychology."

Even when misunderstood, Stumpf maintained a lofty and lenient attitude, witness his criticism in a case closely affecting the readers of this Journal. The point in dispute was the hearing of accords, a theory founded on the questionable authority of a musical

encyclopaedia and supposed to describe the perception of vowel-structure. In a letter dated April 24th, 1930, Stumpf wrote as follows: "In music an accord is formed by at least three different single notes of nearly equal strength whose primary tones either agree (concord; triad in sharp or flat), or are produced by the addition of discordant notes to a triad (discord). We know that in most cases a single note already consists of several individual ones related to each other like the notes of accords. But they are not equally strong; nor can they be distinguished from each other. Hence nobody will see an accord in the single note of a clarionet. Nor is an octave or a fifth an accord when taken by itself, for there must be at least three distinguishable notes. For the same reason I should not take a vowel for an accord. Although they stand in harmonic relations to each other, the partials cannot be distinguished, not being equally strong, even approximately. Moreover, there are vowels of only *two* notes (*Sprachlaute*, p. 195). We may concede, however, that some vowels enjoy the reflected splendor of an accord in sharp when their partials stand in the proportion 4 : 5 : 6. It appears that this purely sensuous effect does not depend upon the perception of the three notes."

Only an abuse of science for the self-advertisement of dishonest sensation mongers called forth strong words from the pen of Stumpf, witness his slashing condemnation in a case of scientific fraud (see *Zeitschrift der Internationalen Musikgesellschaft*, 1904–11).

Whoever was privileged to sit at the feet of Carl Stumpf will forever cherish the memory of a clear and concise thinker, of a strict but kind-hearted and indulgent teacher, of a modest and really great man of science. He recalls that deep veneration which students towards the close of last century felt, as needs they must, towards their teachers at the *Universitas Magistrorum et Scholarium*. Stumpf's own attitude towards science was that profound veneration of which Goethe says: "If by a miracle it were suddenly to spring from all men, earth would be cured of all the evils from which it seems to suffer without hope of relief."

May the reader sense some of this spirit of reverence in a noble passage from Stumpf's rectorial address on the "Rebirth of Philosophy" (Oct. 15th, 1907):

"The palm of victory in the struggles of the mind still awaits a conqueror. We need a scheme of ideas encompassing the natural and spiritual sciences with such convincing force, as to inspire afresh the searchers after truth and to imbue with new life the whole of educated humanity. If such a thing is possible, it calls for a heavenly genius who unites in himself the mathematical gifts, the manysidedness and the logical clearness of Leibniz with Kant's intellectual profoundness and ethical pathos. May the German people be granted the privilege of bringing him forth. But at the same time let us hope, that the future, whatever it may have in store for us, will safeguard these three things: The unity among nations in the pursuit of learning, the simplicity of mind without which the wisdom of the serpent will not find truth, and finally that liberty of inquiry and expression to which, among all the sciences, philosophy has the foremost claim."

THE FUNCTION OF THE SPEECH PATHOLOGISTS IN STUDYING CASES OF DYSPHONIA

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Aphonia is a blanket term to cover aphonias proper and related disphonias, that is to cover complete loss of voice as well as disorders of vocalization that still permit the patient to use vibrant tone of a sort. Any deviation from normalcy of voice may be called a dysphonia. The normal speaking voice is characterized by the following conditions:

1. Adequate loudness.
2. Clearness of tone.
3. A pitch appropriate to the age and sex.
4. A slight vibrato.
5. A graceful and constant inflection of pitch and force which follows the meaning of what is spoken.

Any departure from these norms should be considered as a vocal defect—dysphonia or aphonia. (1) Voices lacking adequate loudness may be described as weak, thin, or asthenic. (2) Those lacking clearness of tone may be hoarse, husky or stridorous. (3) The terms high, shrill, enunchoid, or treble usually refer to voices lacking pitch levels appropriate to the age and sex of the persons being studied. (4) Voices that lack vibrato are said to be hard, metallic, or flat; those that exhibit too much or an irregular and uncontrolled vibrato are described as tremorous and palsied. (5) In terms of inflection or its lack, a voice may show exaggerated pitch changes or constantly recurring inflection patterns, such as a falling inflection, suggestive of fatigue, at the end of every phrase; or again it may have very little change of pitch and force—in other words, it is monotonous. It is rare, indeed, that a defective voice can be described in terms of only one of these categories; usually terms from two or more categories are needed to describe it adequately.

It goes without saying that there is always a reason for any of these departures from the norm; but the reason is not always structural. Before any vocal training is undertaken, the cause of the dysphonia should be ascertained, and in this a laryngoscopic examination is the first step.

The purpose of this examination is not so much a search for morbid conditions and their diagnosis as a study of the larynx as a producer of voice. The characteristics of the ideal glottis are:

1. It must have two edges that can be brought into exactly parallel approximation.
2. This approximation must be so close as to prevent the escape of any air except when driven by a real chest pressure.
3. The approximation must not be so close as to prevent the free movement of the bands when set in vibration by the air stream.

These three requisites of the normally functioning glottis should be kept in mind while the laryngeal picture is in view. However, in addition to these three requisites a fourth condition is necessary for the production of the normal voice, viz., the chambers of the throat and mouth should be patent enough to permit the proper resonance of the tone and its proper delivery into the outer air.

In his study of disorders of voice the worker in the field of speech rehabilitation is concerned with three groups of cases: (1) those presenting actual pathological conditions of the larynx, (2) those showing hysterical symptoms, and (3) those whose voices are defective through non-pathological causes.

The first group the speech pathologist handles in co-operation with the laryngologist. The person wanting vocal improvement presents himself sometimes first to the laryngologist and sometimes first to the speech pathologist. However, the case is referred, whenever the cause is a pathology, each specialist should bear in mind the possibility that the other has a legitimate concern in the case. When the pathology is active, the laryngologist's responsibility is often complete; when the pathology is that of post-operative lesion, a healed laryngeal wound, or the sequelae of a paralyzing disease or wound, then the speech pathologist is often chiefly concerned, but more frequently both specialists are concerned jointly. Then since voice is controlled so largely by hearing, often the otologist is directly interested and concerned in the diagnosis and management of the case of dysphonia. It becomes important therefore, for the speech pathologist to be able adequately to classify cases that come to him so as to separate from the rest those in whose cases he shares responsibility with the laryngologist and/or the otologist.

It seems to me absolutely imperative that the worker in the field of speech be able to employ the technique of that eminent teacher of voice, Manuel Garcia, who developed the laryngoscope and gave it to the world for the study of voice conditions. Certainly if the speech worker has not the technique of viewing the larynx, he is presented with two alternatives, either to refer every case of voice defect to the laryngologist or to begin the training of these cases without such reference and to run the grave danger of working with a case in which active pathology may be increased by the voice training. If he adopts the first of these alternatives he is going to

refer at least 24 cases having no pathology for one case in which actual pathology exists. If he adopts the second alternative his professional negligence is going to "slap him in the face" eventually. Hence he should either frankly refuse to accept voice cases or else be so well acquainted with the normal larynx that he can recognize deviations from normalcy and refer all such deviant cases to the laryngologist. It is not to be expected that he will be able to diagnose the pathology but only to recognize its presence.

With the hysterical cases he again shares responsibility with the psychiatrist. Since voice is one the agencies of social intercourse it is peculiarly susceptible to hysterical impediments. The hysteric's mechanism of shutting himself off from society is very likely to take the form of vocal defects since by this means he achieves his unconscious purposes more effectively than through any other agency, unless it be that of an articulatory disorder. These hysterical dysphonias are very difficult to analyze and treat. With the confirmed hysteric the prognosis is not good unless the patient can be made to understand the hysterical mechanism and to combat it by a knowledge of his own self-deceiving propensities. Few indeed of the hysterical patients can be brought to understand their own personality problems. They have a strong resistance to analysis.

Let us consider next the cases of non-pathological causation. In consulting with my friends among the laryngologists I have been impressed from time to time with their apparent indifference to slight non-pathological deviations from type as possible causes for vocal defects. A vocal nodule need not be more than a mere speck to disturb the smoothness of vocalization. The slightest asymmetry of laryngeal structure or function hampers clear vocalization. One need not look for sinus discharges when the glottis is defective ever so slightly. The voice box as such is essentially a mechanical not a physiological mechanism. Its adjustment is as critical as that of a clarinet reed.

The cases of non-pathological causation are these: First, the infantile larynx. Many children begin to use voice for vigorous speech purposes long before the larynx has a sufficiently strong and rigid frame-work to resist the pull of the extrinsic and intrinsic muscles of the larynx as they are brought into play in vocalization. The larynx is capable of being opened widely or being closed completely, but that adjustment necessary for the approximation of the vocal bands, to the point of vibration only, is impossible to achieve without warping the framework so that the glottis presents an irregular opening. Usually the difficulty is that the passage between the arytenoids furnishes such a ready egress to the air stream that not sufficient pressure is exerted on the membranous cords. Sometimes also the distortion of the framework of the larynx shows itself in the partial collapsing of the epiglottis causing a back-pressure from the surface of the epiglottis against the discharging glottis, so that the vibrations are stopped, just as a whistle may be stopped by placing the finger in the airstream a little way from the vent through

which the vibrating air-column is emerging. These cases are mostly found in children between four and ten years of age. Soon after, if the cartilage of the larynx stiffens, the voice becomes clear and vibrant. The second non-pathological condition is that associated with puberty. In many cases the young person continues to use the pre-pubescent type of voice after the larynx has maturated. With the boy that means that he will talk in a falsetto. It is often difficult indeed after he has employed this falsetto for many months to persuade him to use his normal, low-pitched voice. The social problems presented in this change are difficult to meet. In the girl the change is not so much in the structure of the larynx as in the linings of the pharyngeal resonators. The quality of the voice normally changes with the change in the texture of these surfaces. However, many young women, having accustomed their ears to that quality that the voice showed before puberty, strive to continue it. The effort to produce this quality in spite of the change of the resonator produces a tense and unpleasant vocal timbre. In many cases, adults as well as children, the larynx is so constructed that if the glottis is closed to the point of phonation there remains a definite gap between the arytenoids. If the bands are approximated far enough to close this gap, the membranous cords are held too tightly together to produce proper tone. Hence, the voice is either aspirate or wanting altogether. In the ideal larynx the arytenoid glottis is a continuation in the same straight line of the membranous cords. Not having these ideal conditions the voice is defective. This condition of course is no more pathologic than the shortness of fingers would be regarded pathologic in the case of someone who wished to learn to play the piano and found that he could not encompass an octave.

The last important non-pathological consideration is that of vocal nodules. They should be regarded merely as normal protective accretions of epithelium on the part of those who use the voices in such a manner as brings the vocal bands together with a considerable friction. This condition is frequently found in newsboys, professional singers, preachers, political campaigners, and others who must vocalize with great intensity. It is, therefore, usually an occupational disability. It yields best to skillful retraining of the voice and a change of pitch and quality that reduces the amount of friction in the laryngeal machine. These non-pathological conditions are the chief and almost completely the sole responsibility of the speech pathologist. I must emphasize, however, that such a worker must be sure that he is confronted with a non-pathological condition before he ventures to make suggestions as to what should be the disposition of the case.

THE ROLE OF EVALUATION IN STUTTERING BEHAVIOR

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In the following brief list I mean to indicate the more obvious facts to which the term "stuttering" refers, as it is conventionally used.

Resume of Obvious Facts About Stuttering

Intermittent Stoppages:

1. Frequency. Roughly 1–90 per cent of words.
2. Duration. Just perceptible to 1 min. or more.
3. Loci. Generally in relation to certain sounds, words, and other spatial, situational and experiential elements or cues.
4. Specific Phenomena. Expectation of "stuttering," aversion to "stuttering," tension and "associated movements," repetition, prolongation, interjected sounds, silent intervals.

The most obvious fact about stuttering is that every now and then the stutterer stops the forward flow of his speech. These stoppages occur on from 1 to 90 per cent of the words; for most stutterers about 5 to 25 per cent is probably correct. The main implication of this well-known fact is that there are, in the stutterer's speech, periods of fluency. The importance of this is that any theory must account, not only for the stoppages, but also for the fluent intervals. Any theory which posits a constant causal factor does not do this.

The stoppages have a duration that ranges from just perceptible to seldom more than one minute. The theorist's main difficulty in this connection is that of accounting for the remarkably brief duration of such profoundly complicated phenomena as are involved in the stoppages. The average duration is probably not over one or two seconds and is quite possibly less than that. To ask why these stoppages occur is not quite so puzzling as to ask why they end so quickly, since they seem to involve profound organismic disturbance.

We are also interested in the fact that the stoppages do not occur haphazardly. They not only occur now and then, but they also occur in a significantly systematic fashion. Many studies have shown that the stoppages occur with significant differential frequency in relation to sounds, distinguishing features of the paper from

which material is read, content of reading material, marks drawn through words, size and type of audience—in general, spatial, situational, or experiential cues associated with previous stoppages. Many theories, otherwise very fine, are peculiarly deficient in relation to these facts.

As we look at the more obvious specific phenomena involved in the moments of stoppage, we are struck with the fact that the organism does not merely come to rest, or "go to pieces." It presents certain quite definite activities.

In several studies we have found that phenomena which might be called expectation of stuttering, aversion to stuttering, and tension are commonly involved in the stoppages. There are also "associated movements," by which I mean such activities as shutting the eyes, turning the head, etc. We all know these occur, even if we are not so sure just what they are associated with.

The phenomena which I have labelled repetition of sound, prolongation of sound, interjection of sound and silent interval are extremely obvious. I mention them because they are also extremely important. They imply the startling fact that when a stutterer stops the forward flow of his speech, does not proceed to produce the next sound in the sequence, it is impossible for us to conclude that he is organically unable to produce it. If he presents a silent interval, all we observe is that he does not—we do not observe that he cannot—produce the next sound. In fact, we observe as a rule that he is doing something that clearly prevents him from producing the next sound, such as holding the breath, compressing the lips, etc. If he presents repetition, prolongation, or interjection of sound, all we observe is that he is not even attempting to produce the next sound *and* that he is clearly capable at that moment of producing other sounds, which are, to all appearances at least, as "difficult" as the sound he is refusing to form or attempt. All statements about the stutterer's "inability" to speak must be evaluated in relation to this perfectly obvious fact.

I must mention, also, certain other facts, which are not obvious, but which are well known to you as a result of the researches of Dr. Travis, Dr. Robbins and others. These facts we may refer to as changes in action current phenomena, reflex response latency, heart action, blood distribution and pressure, eye-movements, subtle aspects of respiration, and occasional changes in brain wave phenomena. I think of these facts as profound accompaniments of the obvious reactions I have noted. I need hardly point out that such phenomena are not to be thought of as being, in themselves, evidence of some kind of "instability," in terms of which, in turn, they are to be accounted for. (Such reasoning would run about as follows: These bodily changes during the stoppages occur because of instability. How do you know there is instability? Because the bodily changes occur.) It may be, of course, that these changes occur because the stutterer's organism is in some way "unstable," but some other evidence of "instability" would have to be presented. I

do not say it cannot be found. I only say that the phenomena occurring during the stoppages are not admissable as evidence of it if they are to be accounted for in terms of it.

It is to be especially emphasized that the activities performed by the stutterer during his moments of stoppage do, in fact, have the effect of stopping rather than facilitating the forward flow of speech. In spite of how persistently the stutterer may contend that he must use those activities or techniques in order to "get the next sound out," the activities do serve to stop respiration, or phonation, or articulation—one or two or all of them—in the sense that the "next sound" is produced only when these activities are discontinued. That is why I should call them stoppage techniques—to emphasize their effect on speech.

We must now make a further statement about these facts. They do not occur all at once as far as a single moment of stuttering is concerned. Nor do they all appear simultaneously at some instant in the stutterer's life. If they do not occur simultaneously, then they must occur in some kind of order. Something happens first and is followed by something else, etc.

Let us call whatever happens first, the first order reaction.

Let us call whatever happens next, the second order reaction, etc.

And now, there is one other fact—and we need a word for it. I may not have chosen the best word, and I shall welcome a better one. These reactions do not just happen. They are reactions to something. Let us say, then, that they express evaluations of that something.

I think of evaluations in the present sense as positive or negative. We may experience infinite degrees of liking something, as we may experience infinite degrees of dislike for it. The former we may call positive evaluation, the latter negative evaluation.

I think of positive evaluation as being expressed by activities involved in acceptance, and I think of negative evaluation as being expressed by activities involved in rejection.

Let us think, then, of a child's negative evaluation of the act of speaking to his angry father. He expresses this negative evaluation in the form of hesitant speech—let us say, by repeating a sound. This I would term a first order evaluation and reaction.

If he evaluates his own hesitant behavior positively—i. e., if he accepts it—he expresses this positive evaluation simply by performing the hesitant behavior so long as there is a negative evaluation to be expressed. Thus, if his second order evaluation (of his own hesitancy) is positive he is merely hesitant in his speech—just as everyone is on occasion.

But if he evaluates his own hesitant behavior negatively, he will do something about it, he will react to it. He will tend to reject it, stopping it entirely or modifying it.

He may stop the repetition altogether by the obvious means of doing something else, such as pressing his tongue up against the hard

palate. For so long as that first order negative evaluation exists he will express it in hesitant or stoppage behavior of one kind or another. He is refusing to speak that next sound to his father, just as long as he evaluates negatively the act of speaking it.

Again, then, if he evaluates this second order reaction, this tongue tension, positively, he will express this positive evaluation (third order) of it simply by performing it so long as there is a first order negative evaluation to be expressed in hesitant or stoppage behavior.

But if he evaluates the tongue tension negatively, again he will either modify it or do something else, such as compressing the lips.

This, in turn, will be negatively evaluated and so modified or replaced—or positively evaluated and continued just so long as he evaluates negatively (first order) the act of speaking the next sound to his father.

Now, what I have said may apply to any given moment of stoppage, or to changes in the stutterer's stoppage technique as these changes appear in successive stoppages over a period of years.

Thus, we see the development of stuttering as a spiral-like process in which evaluation plays the rôle I have indicated, and in which we see, accordingly, an ordered series of reactions to reactions to reactions, etc.

Such a scheme makes it possible to represent fairly well the facts concerning the frequency, the duration, and the loci of the stoppages in the stutterer's speech, and the specific phenomena involved in the stoppages.

Therapeutically the formula would seem to be this: (1) Set up positive first order evaluations of the act of speaking to listeners. This is what we all do as mental hygienists, obviously—and I shall not presume to tell you what your methods of doing this are. And it is also what we all do when we try to improve what we call physical condition or stability. I say this on the assumption that a sick or injured or constitutionally deficient or unstable individual will be more likely to evaluate speech and speech interruptions negatively.

Second, this scheme would seem to imply that we should work toward a positive second order evaluation. For to the degree that the stutterer has this he has only first order reactions of hesitancy—and you as normal speakers have those. If we can get a stutterer to speak the way you do, we will probably be satisfied. As I see it, a second order positive evaluation is to be developed through performance—voluntary performance if you prefer—of the first order hesitant or stoppage reactions. If the consequences of that performance are not unduly detrimental, as actually observed, the positive evaluation should develop. But, of course, the performance must be positive, expressive of thorough acceptance of that behavior.

Studies of children which I have had the pleasure of making with Dr. Van Riper, Miss Dorothy Davis, Mr. Hartwell Scarbrough and several others reveal that in 92 per cent of the 47 child stutterers we have studied to date, the first order reaction was a simple, loose

repetition of sound, syllable or word. When this was negatively evaluated—disapproved by the parents and then by the child—other reactions appeared in series. The higher order reactions tended to be more complex, involved more tension, and more stoppage generally. In the cases where we have been able to develop influences conducive to a positive first order evaluation of the speech act, and to induce a positive second order evaluation of any hesitancy behavior that occurred, the results have been such that they can be conveniently stated in terms of the formulation here presented.

We may schematize the above generalizations as follows:

E1−, R1−, E2+, R2+
E2−, R2−, E3+, R3+
E3−, R3−, etc.,

in which E1− represents a negative first order evaluation—the first in a series of events. It is overtly expressed as R1−, a negative first order reaction. If this is positively evaluated (E2+) the overt expression of this (R2+, positive second order reaction) ends the series. But if R1− is negatively evaluated (E2−) this negative evaluation is overtly expressed in a negative second order reaction, R2−; etc.

There is no magic in these words or symbols. The only justification for them, and for the arrangement I have given them, lies in any usefulness they may have for anyone who wishes to discuss, and to predict, the complicated phenomena collectively labelled "stuttering."

STUDIES IN THE PSYCHOLOGY OF STUTTERING, VIII.

The Role of Visual Cues in the Precipitation of Moments of Stuttering*

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This study was done in order to determine whether and to what degree the frequency and distribution of moments of stuttering are affected by the stutterer's visual perception of himself while reading orally.

The point of attempting to ascertain such facts lies in their relevance to an issue of fundamental importance: To what degree are the frequency and loci of moments of stuttering determined by factors, of whatever kind, occurring intermittently and operating with varying affect from one moment to another or one situation to another, as contrasted with factors occurring constantly and operating with relatively constant effect regardless of any given situation or moment of time? Such constant factors are ordinarily conceived by the speech pathologist as "constitutional."

No data bearing directly upon the specific problem of the present study have been reported, although a number of studies dealing with the fundamental issue stated above have been published. Studies by Johnson and Knott (1), Johnson, Larson, and Knott (2), Johnson and Brown (3), Steer and Johnson (6), Van Riper and Hull (7), and Milisen (4, 5) are representative of previous investigations which have shown that moments of stuttering are precipitated at least in part by intermittent and fluctuating factors.

Of the twenty stutterers involved in this study, nine were connected with the Speech Clinic of the State University of Iowa and eleven were enrolled in the Speech Clinic of Purdue University. Eighteen were male and two were female. They ranged in age from seventeen to twenty-eight years, the average being twenty-one years, six months. Fourteen subjects had been enrolled in a speech clinic previous to participation in this experiment, while six had not received therapy. Four of the fourteen clinic cases had been in a

*This study was directed by Dr. Wendell Johnson at the State University of Iowa as part of a program of studies in the psychology of stuttering. Dr. Mack D. Steer, Director of the Purdue Speech Clinic, co-operated in the collection of data. Read before the American Speech Correction Association, Chicago, October 11, 1937.

speech clinic only six days before they were used as subjects in this study.

Each of the twenty stutterers made twelve readings of a standardized test passage of 180 words, making a total of 2,160 words read by each of the subjects. A total of 43,200 words was read in the experiment. Each of the 20 cases stuttered nineteen or more times while reading the 2,160 words.

In situation one, or what we shall term "ordinary readings," each stutterer read to the experimenter. The experimental situation was kept as free from disturbing influences, and was held as highly constant from one stutterer to another, and one reading to another, as possible. Each subject was instructed to read the passage at a rate of speed and in a tone of voice that he considered normal for himself. He was further instructed not to make an undue effort to avoid stuttering. He then read the standardized reading passage five times. On a duplicate copy the experimenter checked each stuttered word by drawing a line through the letter representing the sound on which stuttering occurred.

The procedure used in situation two, or the "mirror readings," was similar to that used in the first situation. The subject was instructed to glance at the reading passage and retain as many words as he could easily remember. The subject then dropped the test passage out of sight, looked directly into a mirror and reproduced the portion of material he could recall. There were five readings of the test material in this situation. The situation required the subject to speak from memory in the sense that he did not look directly at the test passage while speaking; but, of course, he was permitted to look at the material as often as he cared to. The effect of this memory factor upon the experiment will be reported below.

The procedure used in the "check readings," or situation three, was identical to that used in situation one with the following exception. The subject in this situation read the test passage only twice. By preliminary observation two readings were found to give a fairly accurate picture of the frequency of stuttering after the visual cue variable was eliminated. As in the preceding situations the experimenter checked each stuttered word on a duplicate copy of the standardized reading passage.

The writer acted as the experimenter throughout the study. Several precautions were taken to increase the experimenter's reliability in recording stuttering reactions. No data obtained during the first month of experimenting are included in this study. In order to determine the consistency of the experimenter's ability to recognize and record moments of stuttering, the following technic was employed. Phonograph records were made of the speech of four stutterers. These records were played four times with intervals of one day between each reproduction. The experimenter tabulated the stuttering on a duplicate copy of the reading material. Using the method of computing observational reliability that has been used by previous workers, Johnson and Knott (1:17), the experimenter's reli-

ability coefficient is found to be 1.00. An experienced clinician at the State University of Iowa then checked the phonograph records on duplicate copies of the reading material. The experimenter showed an average agreement with him of 97 per cent.

Results

Data from all cases for all readings were combined and are presented in Table I. This table represents the number and percentage of words stuttered in each of the twelve readings by all subjects. In the first column, situation one refers to the five ordinary readings; situation two, the five readings for which the mirror was used; situation three, the two control readings for which the same procedure was employed as was used in situation one.

TABLE I

COMPARISON OF NUMBER AND PERCENTAGE OF WORDS STUTTERED IN EACH OF TWELVE READINGS FOR ORIGINAL AND CONTROL EXPERIMENTS

	No. of Words Stuttered		Percentage	
	Original Experiment	Control Experiment	Original Experiment	Control Experiment
Situation No. 1—				
Reading No. 1.....	501	162	13.9	18.0
2.....	364	128	10.1	14.2
3.....	294	99	8.2	11.0
4.....	275	104	7.6	11.6
5.....	231	107	6.4	11.9
Situation No. 2—				
Reading No. 1.....	537	113	14.9	12.6
2.....	382	119	10.6	13.2
3.....	298	113	8.3	12.6
4.....	277	109	7.7	12.1
5.....	247	126	6.9	14.0
Situation No. 3—				
Reading No. 1.....	171	100	4.8	11.1
2.....	150	62	4.2	7.7

Inasmuch as the data presented in Table I are massed, the individual scores for each of the twenty cases being combined, the N used in computing each of the percentages in Column IV was 3,600, the number of words read by all subjects (180 words times 20 subjects).

The differences in frequency of stuttering from reading to reading were determined. The five readings in situation one will be referred to as "ordinary readings," five readings in situation two as "mirror readings," and the two readings in situation three as "sixth and seventh ordinary readings."

In the fifth ordinary reading the twenty subjects stuttered 231 or 6.4 per cent of the 3,600 words read. In the first mirror reading the same subjects stuttered 14.9 per cent of the same 3,600 words.

The difference between these two per cents is 11.81 times larger than its standard error.

In the first mirror reading 14.9 per cent of the words were stuttered, and in the fifth mirror reading 6.9 per cent. The critical ratio here, or the difference divided by its standard error, is 10.95. Another method of analyzing these differences, which involves a computation of the average change in frequency of stuttering from one reading to another (commonly called the "method of gains"), yielded essentially the same results, in that all the differences cited here as significant were shown to be significant by the "method of gains."

Obviously, at least two factors could be operating to affect the results obtained in situation two, namely, the visual cue or mirror image and a memory factor. To show the degree to which the specific factor (visual cue) was operating, it was necessary to run control readings, eliminating the visual cue and retaining the memory factor.

Five stutterers were used in the control experiment. None of these subjects were used in the original study. The procedure followed in the control experiment was identical to that of the original experiment with *one* exception. In situation two (mirror reading) the subjects were instructed to reproduce the portion of material they could recall while looking at the *back* of a mirror.

These comparative data show the memory factor to have little or no effect as seen in the comparison of Columns IV and V in Table I. From the observation of these percentages, one is tempted to say that the stutterer's visual perception of himself was apparently the chief factor responsible for the increased stuttering when the mirror was introduced.

By analyzing the data further it was found that there was a marked tendency for stuttering to occur in the first mirror reading on the same words that had also been stuttered in the first ordinary reading. This finding is presented in Table II.

TABLE II

CONSISTENCY OF LOCI OF MOMENTS OF STUTTERING FROM FIRST ORDINARY READING TO FIRST MIRROR READING

FIRST ORDINARY READING vs. FIRST MIRROR READING		N	No. of SUBJECTS	D / ∂ DIFF.
Number of words stuttered in the first mirror reading	537	3,600	20	
Per cent of these words stuttered in the first ordinary reading	49.0	537	20	
Per cent of all words stuttered in first ordinary reading (chance)	13.9	3,600		
Difference	35.1			15.95
∂ diff.	2.2			

Correlation coefficients (rank order) were computed for each pair of compared readings, and these ranged from .84 to .95, showing high consistency in the rank order of the 20 subjects, with regard to frequency of stuttering from one reading to another.

Summary and Conclusions

The results of this study show that frequency of stuttering was significantly increased when the stutterer observed himself in a mirror while reading orally.

There is no attempt here to say what specific factors cause the variability in the frequency of stuttering; this investigation was not designed to discover what particular variable in the visual cue was causing the increase in the frequency of stuttering moments—whether it was the concentration on the mirrored reflection of the performer, the change in the focus of attention from the reading to the mirror, the sudden visual examination of the stuttering behavior, etc. The results of this study do imply that intermittent factors do exist, and that there is a relationship between these intermittent factors and frequency of stuttering moments.

Among the many questions provoked by this study are several which are of special interest. I consider it particularly important to ask whether it might be possible that intermittent factors, of which the visual cues studied in this investigation might be regarded as more or less representative, possess certain characteristics in common? Might they even be reduced to a single term? Or, are there, rather, several—perhaps even an infinite number—of these intermittent factors influencing the precipitation of moments of stuttering?

Should the answer to this latter question be a scientific "yes," it would indicate that therapy should be directed toward the elimination of specific intermittent irritants. But if the answer to the *first* question should eventually be "yes," or, in other words, if we should be able to find in all the various intermittent factors which contribute to stuttering a small enough number of common characteristics, then perhaps the speech clinician will be able to develop certain therapeutic aids which might be generally appropriate.

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STUDIES IN THE PSYCHOLOGY OF STUTTERING, IX.

The Nature and Effect of Stutterers' Avoidance Reaction*

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The specific purpose of this study was to determine the types of avoidances stutterers reveal and the effect of these avoidances on specified phases of adjustment.

Thirty-three autobiographical documents written by twenty-nine adult stutterers in the University of Iowa Speech Clinic were examined, and passages were selected which described avoidance reactions. Any item of behavior was classified as avoidance behavior if the stutterer expressly designated it as such; if it constituted an implicit or explicit means of avoiding stuttering and if, so far as the data showed, there were no other pertinent purposes or circumstances to which the behavior was more closely related; or if the item of behavior satisfied either one of the above criteria.

Two judges, working independently on duplicate copies of the same autobiographies, marked every passage selected as representative of avoidance behavior. The behavior described in these passages was then classified according to whether or not it was judged to have affected speech, home, school, vocational, heterosexual, or personal adjustments. These major headings were subdivided to indicate specific effects; and each item of behavior was entered under as many of the speech effect headings as the judges chose; under one or more of the other major adjustment headings; and, of course, under as many sub-headings as the judges chose.

In entering a behavior item under any one of the sub-headings, the judges indicated by plus or minus whether the judged effect of the behavior represented an increase or decrease in the amount, frequency, rate, or degree of the adjustment indicated in the subheading. Age periods during which the behavior occurred were indicated by 1, 2, 3, and 4, indicating preschool age level, elementary school age level, high school age level, and beyond high school age level, respectively. If the age level was not indicated, this was also

*This study was directed by Dr. Wendell Johnson at the State University of Iowa as part of a program of studies in the psychology of stuttering. Miss Ruth Stutenroth assisted in this investigation. Read before the American Speech Correction Association, Chicago, October 11, 1937.

noted. After the tabulations were finished, each specific entry in any column on which both judges agreed was taken as valid. A column entry made by one judge only was regarded as of doubtful validity, and was discarded. Therefore, an alnaysis was made of *only* those items selected as items of avoidance reaction by both judges, and classified identically by both judges. There were 233 such items. The effects of these 233 avoidance reactions upon speech and other aspects of behavior are as follows:

Effects of Avoidance Reactions on Speech Behavior

There were 233 behavior items selected by both judges for classification as avoidance reactions affecting speech. Both judges agreed in 378 judgments concerning the effect which these 233 avoidance reactions had upon speech behavior. Of these 378 effects, 215 were classified as effects upon the amount of speech; 96.3 per cent of these 215 were such as to decrease the amount of speech. As an example of an avoidance reaction judged as causing a decrease in the amount of speech, the following passage from one of the autobiographies may be quoted:

"I remember I had someone to type me out a card with the name of sandwiches on it and when someone asked the kind of sandwiches we had I would hand them the card. When they wanted to know the kind of ice cream we had I would just name over the easy ones. Sometimes I would only name two or three."

Of the 378 effects there were 118 classified as effects upon the choice of words and subject matter. An example of this type of reaction is the following quotation:

"For instance, if I started off on a sentence and then hit upon a word I knew I could not say without stuttering, I would substitute another word which could be more easily spoken."

The greatest number of avoidance reactions under speech were classified under the two items I have just mentioned, namely, the effect upon the amount of speech and the choice of words and subject matter. Other effects under which the remaining 27 items were classified are: the effect upon the rate; upon the proportion of speaking occupied by time intervals between relevant words; upon the proportion and amount of irrelevant sounds, words, and noises; and upon the condition of vital bodily functions and the nature of overt bodily movements accompanying speech.

Effects of Avoidance Reactions on Behavior in the Home

There were 18 behavior items selected by both judges for classification as avoidance reactions affecting behavior in the home. Both judges agreed in 46 judgments concerning the effect which these 18 avoidance reactions had upon behavior in the home. Of these 46 effects, 8 were classified as effects upon the amount of time spent in the home but in isolation; 100 per cent of these 8 effects were such as to increase the amount of time spent in the home but in isolation. An example of an avoidance reaction judged as causing an increase in

the amount of time spent in the home but in isolation is seen in the following quoted passage:

"But still I played alone a great deal because it was so much easier to adjust material environment to myself than human environment, and I grew to be quite contented, in my own pleasant companionship. I isolated myself into a quiet, congenial, warm Utopia over which I was complete master in every one of its varied imaginative phases."

Of the 46 effects there were also 8 classified as effects upon the nature of activities indulged in at home. An example of this last type of avoidance reaction is to be seen in the following quotation:

"My only enjoyment was to work alone in the fields and dream of what a great success I was going to be. My success pictures always had the foundation of perfect speech. I disliked working with anyone. That called for conversation and would not let me dream."

The remaining 30 effects classified under the major heading of Home were rather evenly divided under the following items, or sub-headings: the effect upon the degree to which the relations with the father were harmonious and intimate; upon the degree to which the relations with the mother were harmonious and intimate; the degree to which the relations with the siblings were harmonious and intimate; the amount of time spent at home; the amount and nature of conversation in the home; the degree to which visitors in the home were enjoyed; the frequency with which friends were brought into the home; the age at which the stutterer assumed a significant degree of economic independence in the home; and the extent of the development of individuality in attitudes and activities as shown in the home.

The Effects of Avoidance Reactions on Behavior in School

There were 86 behavior items selected by both judges for classification as avoidance reactions affecting school behavior. Both judges agreed in 179 judgments concerning the effect which these 86 avoidance reactions had upon school behavior. Of these 179 effects, 39 were classified as effects upon the amount of oral recitation; 94.8 per cent of these 39 effects were such as to decrease the amount of oral recitation. An example of an avoidance reaction decreasing the amount of oral recitation may be seen in the following quotation;

"In high school, much stress was placed on oral recitation. I have hesitated to answer in class many times when asked a question by the teacher because I could say, 'I don't know,' without stuttering, but I couldn't answer the question without stuttering, so I would pretend dumbness, and therefore have it counted against me."

Of these 179 effects there were 19 classified as effects upon the amount of time spent in studying; 89 per cent of these 19 effects were such as to increase the amount of time in studying. An example of this last type of avoidance reaction, causing an increase in the amount of time spent in studying, is the following quotation:

"I enrolled for every extra course that I could and at graduation had the highest number of credits any student in this school had ever

achieved. For a period of one semester during my sophomore year I received straight A's in all my studies. I also managed to stay on the honor roll during my whole high school career. With this extra amount of work I had a great deal of outside work, but I enjoyed it, perhaps because I thought it compensated for my poor speech."

The remaining effects classified under the major heading of School were divided among the following sub-headings: The effects upon grade average; upon the amount of retardation; the age at which formal schooling was discontinued; the types of extra-curricular activities indulged in; the degree of preference for certain school subjects; the number of organization offices held; the number of school organizations to which the stutterer belonged; the frequency of attendance at social functions at school; the apparent enjoyment of school social functions; the amount and nature of conversation with schoolmates; the number of friends among schoolmates; the frequency and nature of discipline problems; the degree to which teachers were liked or rejected; and the degree to which parent-teacher relationships were harmonious.

Effects of Avoidance Reactions on Vocational Behavior

There were 16 behavior items selected by both judges for classification as avoidance reactions affecting vocational behavior. Both judges agreed in 21 judgments concerning the specific effects which these 16 avoidance reactions had upon vocational behavior. Of these 21 effects 13 were classified as effects upon the direction of the stutterer's vocational ambition. As an example, I quote the following:

"At the present time I am still uncertain as to the final channel into which these tendencies may be directed; publishing, teaching, research; not a little depends on the state of my speech, which has had, to round out the cycle, so much to do undoubtedly, with forming the characteristics whose fate it may decide."

Of these 21 effects 4 were classified as effects upon the degree of agreement between the stutterer's definitely expressed ambition and the nature of a given job; 75 per cent of these 4 effects were such as to decrease this agreement. As an example:

"I refuse to go through life being apologized for. Yet such refusal, though it is better than nothing, certainly does not remove the necessity for an apology. I have tried, during the second half of the past year, to proceed as much as possible as though the stammering didn't exist, but that hasn't made it non-existent. When I see ahead of me only stacks of yellow Home Study envelopes (ordeals of teaching by correspondence) I'd much rather be dead."

The remaining 4 effects were classified among the following subheadings: The effect upon the degree to which co-workers were liked or respected; upon the length of time worked at a given job; upon the amount of remuneration; and the number of persons under the stutterer's direction.

Effects of Avoidance Reactions on Heterosexual Behavior

There were 26 behavior items selected by both judges for classification as avoidance reactions affecting heterosexual behavior. Both judges agreed in 83 judgments concerning the specific effects which these 26 avoidance reactions had upon heterosexual behavior. Of these 83 effects, 20 were classified as effects upon the amount of time spent with members of the opposite sex; 57.2 per cent of these 20 effects were such as to decrease the amount of time spent with members of the opposite sex. As an example:

"About this time some of the boys started having dates with girls. Oh! I wanted to so bad. I realized that this was out of the question. I knew I couldn't talk to them without stuttering, and I was too shy and too sensitive to stutter in the presence of any girl."

Of these 83 effects, 16 were classified under each of two sub-headings, namely, the effect upon the number of dates (57 per cent involved a decrease), and the effect upon the amount of conversation with members of the opposite sex (85.7 per cent involved a decrease). An example of avoidance behavior involving a decrease in the number of dates:

"During my freshman year I became friendly with one of the Preacher boys and had a few dates with him but felt very inferior because I could not talk to his friends and that summer after a few letters of correspondence we ceased companionship. I then resolved I wouldn't start such friendship with one of that profession again for I felt I was wasting both their time and mine for the rôle of minister's wife surely should not be mine."

And, second, an example of an avoidance which decreased the amount of conversation with members of the opposite sex:

"I was terribly shy around them when not in the schoolroom. However, I do not think I would have been if I had not stuttered. When I saw other boys talking to some of the girls I liked I felt envious, and even hated myself because I could not talk to them too."

The remaining 31 effects were classified under the following sub-headings: the effect upon the age at which the stutterer began to have dates with significant frequency; the number of different individuals dated; the degree of frankness and intimacy with members of the opposite sex; the apparent degree of enjoyment derived from association with members of the opposite sex; the age of marriage; the strength of the desire to be married; the strength of the desire to have children; and the nature of activities indulged in with members of the opposite sex.

Effects of Avoidance Reactions on Personal Behavior

There were 221 behavior items selected by both judges for classification as avoidance reactions affecting personal behavior. Both judges agreed in 526 judgments concerning the specific effects which these 221 avoidance reactions had upon personal behavior. Of these 526 effects, 206 were classified as effects upon the intensity and nature of feeling of inferiority; 88.8 per cent of these 206 effects

were such as to increase the intensity of feelings of inferiority. Example:

"Many times during parties which we attended, have I wished I were not there. I knew I would disgrace him as well as myself for stuttering was to me a disgrace, and I felt that people were embarrassed when I talked. I would and still do find myself very rude at times butting into people's conversation while I would be getting a running start on a bit of conversation myself while they weren't noticing me in particular."

Of the 526 effects 98 were classified as effects upon the amount of conversation with strangers; 96.9 per cent of these 98 effects were such as to decrease the amount of conversation with strangers. As an example:

"I felt well enough before breakfast. Then the Number Two Breakfast in the Grill, prunes, griddle cakes, and coffee. But the syrup was soaked up too quickly, and the waiter did not bring me another pitcher till the remaining half of the cakes was cold and sodden and more leathery than is permissible even in the Grill. He forgot my coffee, entirely, and I was too weak to remind him. Ordering meals, instead of getting easier through enforced practice, seems to grow more trying weekly. I have to point almost altogether now."

A third sub-heading under which were classified 92 effects was the amount of time spent with other people; 92.5 per cent were such as to decrease the amount of time the stutterer spent with other people.

The remaining effects were classified under the following sub-headings: an effect upon the degree of intimacy in relations with the individual's one or two closest friends; upon physical fitness; the amount of indulgence in drinking and smoking; nature of sexual practices; frequency of inaccurate statements made knowingly; frequency of delinquencies; amount and nature of day-dreaming; strength of suicidal desires; degree of enthusiasm in anticipations of the future; and nature of hobbies and avocations.

It is interesting to note that under the major heading of speech the greatest number of avoidance reactions occurred at the "beyond high school" age level. Under the major heading of Home the greatest number occurred at the elementary school level. Under School the greatest number occurred at the high school age level. Under Vocational Adjustments the "beyond high school" age level had the greatest number. Under Heterosexual Adjustments the greatest number occurred at the "beyond high school" age level, and under Personal Adjustments the greatest number occurred at the "beyond high school" age level. No avoidance reactions were reported for the preschool age level.

The results of this study justify the conclusion that stutterers show types of behavior which can be definitely classified as avoidance behavior. These avoidances have an effect upon the stutterer's speech and other behavior. In general, these avoidances tend to delay, decrease, or prevent speech in certain given situations, and they tend to limit the individual's range of social experience.

STUDIES IN THE PSYCHOLOGY OF STUTTERING: X.

Constancy of Loci of Expectancy of Stuttering*

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It was the purpose of this study to ascertain whether or not the stutterer anticipates stuttering relatively consistently on certain words to the exclusion of other words in repeated inspections of the same material.

A number of studies have been made relative to the anticipation of stuttering. Knott, Johnson and Webster (3) found that stuttering occurred on 94 per cent to 96 per cent of the words on which stuttering was expected, and on from 0.4 to 3.0 per cent of the words on which stuttering was not expected. Johnson and Sinn (1) reported that when words on which stuttering was expected were omitted from a reading, the proportion of words stuttered was reduced 98 per cent, and that there was a strong tendency for expectation to occur with reference to words previously stuttered. Other related studies have been done by Johnson and Solomon (2) and Milisen (4).

Sixteen male and four female adult stutterers from the State University of Iowa Speech Clinic served as subjects for the present study. Two of the males did not complete the tests, and one did not stutter at any time during the tests. Therefore, data for the remaining seventeen were used in making the statistical computations.

The procedure was as follows: The stutterer was given a pamphlet which contained unfamiliar reading material. He was given these instructions: "Read the article silently. For each word, strike the tin once, but for any word on which you expect you would stutter if you were to read it aloud within five minutes, strike the wood. Pause two or three seconds at the end of each sentence." The observer sat in such a position as to see the striker that the stutterer held and at the same time to follow on a separate copy of the article the exact progress the stutterer was making. Each time the stutterer struck the wood, the observer underlined the pertinent word. This process was repeated with the same material after from two to six weeks. Both tests were done in a room containing no person other than the subject and observer. The reading passage used was from the University of Iowa Extension Bulletin, No. 378, dated December 15, 1935. The part read was on page 7 and contained 558 words.

*From the State University of Iowa Speech Clinic. All data and materials pertinent to this study are on file in the State University of Iowa Speech Clinic.

The above method was used for two reasons: to make the study analagous to other similar studies that have been done, and to make certain that the stutterer saw the same words in the same order in both tests. By having the stutterer indicate anticipated words with a striker, two things were accomplished: it was certain that the subject actually looked at each word, and there was less chance of his remembering the word on which he expected to stutter if he did not emphasize it by doing the underlining himself. The pause was made at the end of each sentence to enable the observer to be certain that he would be marking exactly the same word which the stutterer indicated. If there was the least doubt of accuracy in this regard, the sentence was checked, but an effort was made to prevent the stutterer from actually using the word or doing anything else that might fix it in his memory. The rate of the stutterers' reading was very close to their normal rates for reading aloud, but speed was always sacrificed to accuracy in recording. The period of at least two weeks between tests was selected to eliminate the possibility of memory of the words expected in the first reading affecting the results on the second. After the second reading, each subject was asked if he remembered any of the words on which he had anticipated stuttering in the first reading. The answer was invariably in the negative, so it is improbable that memory was a very important factor. The underlining on the second reading was done by the experimenter on the same copy as for the first reading, but red pencil was used.

The specific problem may be stated as follows: Of the words on which stuttering was anticipated in the second reading, how many had also been anticipation words in the first reading?

The data were treated as follows: The per cent of words upon which stuttering was anticipated in the first reading was found. Then the per cent of those words which were anticipation words in the second reading that had also been anticipation words for the same subject in the first reading was computed. The results are given in the following tabulation:

First Reading vs. Second Reading		N	No. of Subjects	D diff.
Number of words on which stuttering was expected in second reading	1012		17	
Per cent of these words on which stuttering was expected in first reading	52.5	1012		
Per cent of all words on which stuttering was expected in first reading (chance).	9.3	9486*		
Difference	43.2			27.7
diff	1.56			

*The reader might possibly assume that N in this case should be the same as above, i. e., 1012, since we are comparing the obtained per cent of the 1012 anticipation words—the per cent of these which were anticipation words in the first reading—with the per cent to be expected by chance. In view of the possibility that some readers might consider the plausibility of this assumption, it

The chance percentage given in the tabulation was computed in order to get a measure of the degree to which the loci of the anticipation of stuttering remained constant from reading to reading. Stuttering was anticipated on 9.3 per cent of all words read in the first reading. According to chance, stuttering would be expected, therefore, on 9.3 per cent of any random sample of the words read in the first reading. The words anticipated in the second reading are such a random sample so far as the first reading is concerned. Therefore, by chance, 9.3 per cent of them would be among those on which stuttering was expected in the first reading. But, as we see, 52.5 per cent of them were words on which stuttering was anticipated in the first reading. Thus we see that the loci of expectation in the second reading were not random with reference to the first reading, and cannot be accounted for by chance. The critical ratio of 27.7 indicates that the difference between the chance percentage and the percentage actually obtained is highly significant.

In this study each of 17 adult clinically diagnosed stutterers read silently a passage of 558 words, indicating by means of a specified signal each word which was judged as "a word on which I would stutter if I were to read it aloud within five minutes." Within two to six weeks each subject repeated this performance. To a marked degree, expectation of stuttering (as here defined) occurred during the second reading on the same words on which it had occurred in the first reading.

These findings, together with other findings previously reported by the investigators mentioned at the beginning of this paper, indicate that expectation of stuttering can be regarded as a response to words (and probably to parts of words as well as other cues), and that this response is made more frequently—i. e., consistently—to some words than to other words. It has previously been demonstrated, in the studies cited above, that the phenomena termed "expectation of stuttering" stand in a significant space-time relation to those overt phenomena which are conventionally labelled "stuttering." To find, then, that expectation, *per se*, as operationally defined in the present report,

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seems in order to point out that we are actually comparing two different statistical populations. We are finding the significance of the difference between the per cent of *all words* in the first reading that w re anticipation words, and the per cent of the anticipation words (1012) in the second reading that were anticipation words in the first reading also. Obviously, for this per cent of *all words* in the first reading N is not 1012, but the total words read, 9486. The only way to get an N of 1012 for the chance percentage would be to compute the per cent of words on which stuttering was anticipated in another random sample of 1012 words. This would be pointless, of course, since the object of having as many as 9468 words read in the first place was to obtain a more adequate sample than is afforded by a reading of only 1012 words. One might, of course, subtract the 1012 words from 9486, and then compute the per cent of the remaining 8474 first-reading words on which stuttering was expected. If this were done the critical ratio would be still larger, of course, than the one obtained, since only 4.1 per cent of these 8474 remaining words were anticipation words in the first reading. The difference between 52.5 per cent and 4.1 per cent is 48.4, and this difference is 31.2 times larger than its standard error. It is to be noted, however, that this percentage of 4.1 is not to be regarded as a "chance" percentage in the sense that the 9.3 per cent may be so regarded.

occurs, and that it occurs relatively constantly as to loci, under conditions which preclude the possibility of overt stuttering, is to demonstrate that the phenomena termed "expectation of stuttering" are a relatively stable part of that order of events termed "stuttering." We are probably bound to conclude, therefore, that any theory of "stuttering" which does not involve an adequate account of "expectation of stuttering" does not, by virtue of that fact, involve an adequate account of "stuttering."

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COURS DE LARYNGO-PHONIATRIE

Données dans la salle des conférences de l'Hôpital Bellan 8, Rue Jules-Guesde, Paris (14) du lundi 16 Mai au samedi 21 Mai 1938, par le Dr. Jean Tarneaud, oto-rhino-laryngologiste de l'Hôpital Bellan et du Conservatoire National de Musique de Paris, avec le concours de M. Fouché, Directeur de l'Institut de Phonétique, et de Mme Borel-Maisonny, Directrice du Service de rééducation de la parole aux Enfants-Assistés.

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2—La respiration dans la parole et le chant.
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TWO ROOM TECHNIQUE IN THE TREATMENT OF STUTTERING*

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It has often been remarked that there is less variation in methods of treating stuttering than in theories as to its etiology. This fact is restated by Hahn in his valuable *"Compendium of Some Theories and Therapies of Stuttering,"* which appears in the current *Quarterly Journal of Speech.* Hahn says, " . . . . no matter what theory one clinician may advocate, the therapy he uses may show many similarities to a treatment supported by a different theory."

In line with the tendency toward the overlapping of remedial methods, one finds that various authors have suggested methods whereby the stutterer's ability to speak fluently under certain conditions may be utilized to build his self-confidence. These methods, in other words, start from a situation in which the stutterer experiences no difficulty and then progressively complicate the situation, transferring speech fluency to situations which, for the stutterer, are more difficult.

The two room technique is of this variety. In it, the complexity of the speech situation is progressively increased by working from a stage where the stammerer is isolated, through one where auditors placed in a second room hear him, to a stage where the stammerer practices in the same room with the auditors.

In *Stuttering, Lisping, and Correction of the Speech of the Deaf,* Scripture devotes considerable space to a discussion of confidence building methods. He maintains that therapy should use what he terms the *principle of increasing embarrassment.* Thus, when he has learned to speak fluently before the instructor, the stutterer should be trained to meet more and more complicated situations. Scripture presents a series of specific remedial techniques designed to accomplish this end. There is not time to review each step here. A single illustration will indicate the general approach. Scripture remarks that many stammerers find telephoning hard. He adds: "The special difficulty in telephoning is met by practicing at first on a private line between two rooms. The person at the other end represents 'central' and the people called up. . . When the patient no longer gets excited, the main line telephone is given to him, but the switch is held down so that there is no connection. Some one

*Read before the American Speech Correction Association, Chicago, October, 1937.

near by speaks as if he were 'central.' When the patient feels quite confident at such 'dry telephoning' the switch is released and an actual call is sent. The instructor keeps close to the transmitter, so that at the slightest hesitation he finishes what the patient wants to say."

Scripture mentions one additional point of interest. He suggests that when speech has become fluent before the instructor additional auditors should be brought into the situation. The aim here is to get the stutterer to transfer smoothness of speech from one situation to the other.

For the most part, later writers have tended to be less explicit than Scripture on methods of building confidence. However, most of them make statements which suggest to the speaker that they would admit this device as an adjunct to other remedial procedures. For instance, Travis in his *Speech Pathology* writes: "Although phonetic drills are certainly not indicated in the treatment of stuttering, certain exercises in ordinary and interpretive reading, reciting poetry, and singing may be helpful. Success in these speech activities is realized in two directions. First, it inspires confidence and helps remove the fear of speaking which is the reaction to speech failures. Second, it operates to establish and sustain a dominant gradient of excitation." Again, in their recent book, West, Kennedy and Carr state that "Speech training for the stutterer must be so simplified as to make it possible for him to succeed in the speech situation." This training, they add, should begin " . . . with those activities which offer the least difficulty, and proceed toward the ideal of normal speech." Finally, they state that "As the individual shows increasing self-confidence and speech control, he should be gradually brought in contact with more difficult situations."

As these quotations indicate, most present day authorities agree that, to one degree or another, repeated failures in speech situations influence the attitude of the stammerer toward speech. This altered attitude may in turn aggravate the speech difficulty, a vicious circle being formed. Especially when one is dealing with a stammer of long standing, such complications may make it necessary to use a variety of remedial measures. In many instances methods which increase self-confidence and eliminate timidity can be used in connection with other therapeutic approaches. It is as such a corollary that the two room technique is presented. This technique has proved valuable as an adjunct to other remedial measures when used with certain adult stammerers handled at the Speech Clinic. There may be times when other clinicians may likewise find it serviceable. It is with that hope that the method is now being reported.

The two room technique grew out of and is a combination of two methods suggested by Bluemel in his book, *Stammering and Allied Disorders*. These two methods are among those which Bluemel advocates to bring about what he terms un-conditioning of faulty speech patterns. According to Bluemel this unconditioning is " . . . the method of merging favorable into unfavorable situations

for the purpose of carrying the fluency of the one situation into the other." Regardless of the validity of Bluemel's beliefs regarding the etiology of stuttering, it is apparent from what has already been said that " . . . the method of merging favorable into unfavorable situations. . " is acceptable to a number of authorities. This merging, or call it un-conditioning if you like, is the purpose of the two room technique.

One of the methods advocated by Bluemel is that of telephone conversations. Bluemel says of this method, "Most stammerers speak badly over the telephone, but fluently when alone. Unconditioning is attempted by merging the two situations. A system of house phones is employed, and two pupils converse while secluded in separate rooms. When stammering threatens, a pupil may isolate himself by momentarily breaking the connection." While this method has certain definite advantages, it is limited in that it does not carry the transference into the types of situation most often encountered in life. Even though a suitable house phone system would make it possible for each speaker to have several listeners, the speaker still has the option of isolating himself and the situation is hardly comparable to that of facing a group directly.

Secondly, Bluemel suggests a blindfold technique in which "The pupil is blindfolded and taken into a room where he is assured that he will be alone and will not be overheard. Here he is required to recite a poem, or deliver an informal address. Having been assured of privacy he will probably speak fluently. The procedure is repeated a number of times, and he is then told that some one will be present in the room on some undesignated occasion in the near future. From this point on he does not know whether he is reciting in solitude or speaking to an audience." Fundamentally the idea here is good but there is a grave practical disadvantage. There is always danger that the visitor may make some sound that will inform the stutterer of the presence of another person. Should this occur, at least for the time being, the value of the procedure is lost. The stammerer knows that all he says will be heard. This knowledge can change the whole situation for him.

The two room technique is a combination and amplification of the two methods just described. It was devised in an effort to utilize the most valuable elements of each. As such, credit is due Dr. Bluemel and, naturally, those other writers who have suggested similar methods.

As we said earlier, in the two room technique the complexity of the speech situation is progressively increased by working from a stage where the stammerer is isolated, through one where auditors placed in a second room hear him, to a stage where the stammerer practices in the same room with the auditors. This technique is best carried out in a pair of rooms with a sound-proof window in the wall between them. An electrical system including a microphone, an amplifier, and a loud speaker should be so arranged that the patient, talking in the first room, can be heard in the second. The patient,

however, must not be able to hear the loud speaker in the second room. He must not know when his voice is being transmitted to that place.

In the present instance, a recording studio with its adjoining control-room was used. Here the necessary electrical apparatus consisted of the appropriate parts of the permanent recording equipment. With the aid of this apparatus, the stutterer working in the recording studio could be heard by auditors in the control room.

It is essential that the stammerer understand thoroughly the aim of the method. He is reminded that in certain situations his speech is more fluent than in others. The point is made that the two room method aims at transferring the speech typical of an easy situation into situations which for him are more complex. It is suggested that as his speech is excellent while he is alone, the logical place to begin is here. He is to shut himself in the recording studio, which is thoroughly sound-proofed, where he can read aloud and talk to himself with perfect assurance that he will not be heard by anyone else. At the same time the instructor is to go into the adjoining control-room. The point is made that, if he so desires, the instructor can listen to the stutterer. However, it is definitely promised that the instructor will not "tune-in" until the case has had an opportunity to become thoroughly habituated to working in the studio. The patient understands that later the instructor may listen to him for short periods, which will be made longer as time passes. It is made clear, however, that when this happens conditions in the recording studio will remain exactly as they were. Thus, the case will find himself speaking fluently to the instructor. The initial transfer will have been made.

After having explained the technique to the stammerer, he is taken into the recording studio and seated near the microphone. This, it is pointed out, is done so that he may get used to the instrument. If the amplifying apparatus in the control-room is so placed that signal lights or glowing tubes will be visible to the patient from the recording studio, it is also pointed out that this apparatus will be turned on to accustom the student to it. At this point, it must be made clear that, although the amplifier is turned, on a person in the control-room can not hear what is transpiring in the studio until a switch is thrown connecting the loud speaker to the amplifier unit. The loud speaker, it is promised, will not be used for several weeks and the patient will be informed before it is employed. Further instructions to the case are that he is to split his time equally between reading aloud and chatting about subjects which interest him. A good method is to tell him to read until he comes across some item about which he would like to talk and then to chat about it as long as he likes. He then reverts to the reading until another topic of conversation presents itself. After telling the case to start reading aloud, the instructor goes into the control-room. Here the instructor is careful to remain in the line of sight while engaging in work of his own which makes it quite obvious to the case that he is keeping his promise and is not listening.

After several weeks have elapsed, the stammerer is told that at some future date the instructor will listen to him for a few minutes but that during most of the time the loud speaker will be disconnected. When the instructor finally "tunes-in" on the case, it is essential that no cue of the fact be given, therefore, the instructor must appear hard at work. The stammerer must never be given any indication that at a given moment the instructor is listening to him. Often a case will test the instructor by making some remark which normally would call forth a response from the auditor. Thus, he may ask if one hears him. At such times, it is essential that the instructor refrain from giving any sign that he has heard the remark. Only after the case has finished his performance is it wise to let him know what was heard.

It is not until the instructor has been tuning-in for some time that any comment regarding that fact should be made to the stutterer. Even then the comment should be brief. One might say, for example, "I've been listening to you occasionally during our past few meetings. Everything has been going so well that soon I shall tune-in more often." At this stage it is probably best to use criticism sparingly. Moreover, the best plan is probably to limit it to appropriate remarks about relaxation, breathing and the like or about the relative proportion of reading and chatting. One often finds, for instance, that the case will be slow about introducing impromptu talking into the practice period. He will limit himself too much to reading. In that case it is wise to suggest that the impression gained during the brief listening periods was that more time could profitably be spent in talking.

Step by step the listening period is increased, the stutterer being told ahead of time what to expect. Eventually, a stage is reached in which the case knows that the instructor is listening to him all the time. In most instances, if the technique has been handled properly, the stutterer's reading and his conversational digressions will be very fluent during the practice period. If so, he is ready for the next step, which consists of bringing other people into the control-room.

Before observers are allowed in the control-room, the patient must be told that they are to be present. The method here is a recapitulation of that described above. The case knows that when observers are first present, the instructor will keep the loud speaker turned off. When the stammerer is accustomed to the sight of the observers, short listening periods are allowed. These are increased in length until the loud speaker is turned on continuously. In this way, the stammerer finds himself talking to a group with ease. Until this stage is achieved, the observers, like the instructor, must refrain from indicating that they have heard what the case has said.

Up to this point there has been a certain artificiality in the whole method. The situation can hardly be called typical of everyday life. The next step is to reproduce more closely ordinary speaking situations. In doing this the steps already listed are repeated again, but this time the instructor *moves into the same room with the case.* The

stammerer continues the alternate reading and conversational digressions. It is pointedly stated that at first the instructor will not listen to this practicing. He will bring work with him and busy himself with that. Experience indicates that the best type of work is that which requires the instructor to write. The slight sounds and the overt motor activity attending writing serve notice to the stammerer that the instructor is busy. In time, of course, the instructor listens occasionally and eventually uses some remark made by the stammerer as the starting point for a brief conversation. At the end of the conversation each person resumes his own work. In this manner a time comes when the instructor has ceased to work, is attending to the case's reading, and is engaging him in frequent conversations.

The final stage is that wherein a small group is brought into the room where the stammerer is practicing. Such visitors should be carefully chosen and the same group should attend at successive meetings. At first each visitor busies himself with work or studying of his own, but in time all enter into conversation on topics introduced by the stammerer.

In our clinic use of the two room technique the stammerer meets with the instructor once or twice each week. Therefore, one needs a method whereby the same technique can be used during home practice. The set-up is simple. The case is instructed to get an inexpensive microphone which can be attached to a radio in the home. The microphone, obviously, is not placed in the same room with the radio. The case reads and chats into the microphone. At the radio an assisting family member follows a procedure similar to that used by the instructor. Here, again, a point is reached when the person at the radio is hearing all that the stutterer says. If other members of the family are available, they may be asked to form a small group about the radio, the procedure being the same as that for the group assembled in the control-room. After these steps have been mastered, the stammerer moves into the living room. Here he continues his practicing while other members of the family go about their own business. Finally, the case begins to read to and talk with those who are present.

To illustrate the functioning of the two room technique a brief report on one case may be of interest. The case, F. H., a young man of 24, was admitted to the Speech Clinic during the summer of 1935. Family history was negative, there being no record of speech defects in the immediate family, all members of the family being right-handed, and no other significant factors being evidenced. There were no unusual environmental features. The family is definitely of a superior social level and all indications are that its members are congenial. F. H., incidentally, is the third of four siblings.

Except for two points, medical history was also negative. Birth was premature, the case being an eight-months baby. At the age of six he had scarlet fever, this disease according to the family being the precipitant of the stammering. Present health is good.

F. H. reported that he is right-handed and diagnostic tests revealed pronounced dextrality.

F. H.'s stuttering was primarily of the tonic variety and spasms were at times accompanied by mild facial grimaces. In addition, so many word substitutions were used that during pronounced spells of stuttering very few sentences were ever finished. The severity of the difficulty, F. H. reported, varied with the person to whom he was speaking, with the importance of the material, and with fatigue. Two previous remedial attempts had been made.

At the time of admittance F. H. expressed a strong desire to overcome the difficulty. However, the examining staff members felt that emotionally he was not willing to surrender the stammering.

Therapy proceeded along a number of lines. Relaxation, breathing drills, reading exercises, informal conversations and prepared talks were all used. Because diagnosis revealed such definite dextrality no time was spent on methods of strengthening cerebral dominance. Negative practice or pseudo-stuttering was used for a short time. As it proved unsatisfactory in this case it was dropped. In this regard, it is interesting to note that the more a method called attention to the act of speech the less favorable was F. H.'s reaction to it. When observers visited a lesson, for example, his speech disintegrated so completely that they had to be excluded.

An extensive program of psychological readjustment was included as part of the therapy. F. H. was obviously using his speech difficulty as a means of escaping responsibilities. His family was always ready to pinch-hit for him. This dependence upon the family had to be broken down and a more objective attitude toward the difficulty developed.

At the end of a year devoted to the methods just mentioned, F. H.'s speech had shown some slight improvement. However, there were frequent relapses, and as it was evident that his self-confidence had increased but little, it was decided to use the two room technique with him. For the next nine months major emphasis was placed upon this method, the steps outlined earlier being followed out. Incidentally, it should be borne in mind that attention was still given to some of the methods used earlier. In particular, the attack on the psychological aspects of the case were continued vigorously.

By the time the two room technique had been carried to its conclusion, F. H.'s speech was greatly improved. Spasms were now very rare and word substitutions had almost entirely disappeared. Moreover, a complete change in his attitude was observed. He felt that he could control his speech whenever necessary. One example will illustrate this reversal in attitude. F. H.'s first experience with observers, it will be recalled, was disastrous. He was totally unable to cope with the situation. At that time only two visitors had been allowed during each lesson. When observers were brought into the control-room, F. H.'s reactions were quite different. Knowing that the observers, now numbering from 8 to 10, would be listening to him throughout the entire period, he spent the entire time reading

and *talking to them*, joking occasionally, and obviously enjoying the audience. This behavior would have been impossible for him six months earlier.

Quite obviously, in the case of F. H. there is no way of knowing how much of the improvement was due directly to the two room technique. It is certain that the continued emphasis on mental hygiene was important. Again, methods used earlier may possibly have had delayed effects. However, F. H. himself considers the two room technique to have been the method of greatest benefit to him. This indicates that it served its purpose of increasing his self-confidence. It is the instructor's opinion that the two room technique came nearer meeting F. H.'s needs than anything except the mental hygiene approach.

The two room technique has been and is being used with a number of cases enrolled in the Speech Clinic. With some it has proved gratifyingly successful while with others it has been less effective. Like other methods of treating stuttering, it is not of equal value in all instances. Experience to date convinces the speaker that in cases where building up confidence is an aim, it can often be employed to advantage. However, even in such instances, it should not be used as the only attack on the speech difficulty. Rather, it should be used in connection with other remedial techniques. When employed in this way, the two room technique utilizes the stutterer's ability to speak fluently when alone as the starting point from which to build his self-confidence.

NOTES ON SOME CASES OF WORD BLINDNESS

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Word Blindness or Alexia has been attributed by Ferrier, Monk and Wyllie to a disorder of the visual word "Centre," including the Angular Convolution and the Supra-Marginal Convolution. Two classes of the defect have been distinguished:

(1) those in which the patient is at the same time agraphic;

(2) those in which the patient though word-blind is not agraphic; one being due to destruction, and the other only to subordinate lesion, of the connection between the primary visual centres and the higher visual word centre. It is obviously outside my proper sphere to discuss any of these conclusions; but I would venture to suggest that they were in the main the result of investigation in adult cases of a pathological character. Such seems to have been the case in the classical work of Dejerine and Serieux quoted by Dr. Wyllie in his "Disorders of Speech."[1]

The close investigation of word blindness in young children during recent years and the modification in the general theory of the relation of speech to certain brain centres admits a doubt whether some other types of Alexia may not exist in which a more purely functional disturbance can be distinguished; it is in relation to certain cases of the kind that the following paper is presented. No attempt has been made to theorize on any anatomical or physiological conditions involved, and where the term "centre" is used it is employed merely to indicate a definite and perceptible point in the normal course of the afferent and efferent paths in a speech impulse.

It is obvious that in Alexia the failure takes place between the visual centre in "looking" at the written word and the specific speech centres, sensory and motor.

Two types of cases have been kept under observation and treated for fairly continuous periods:

(A) Cases in young children sometimes exhibiting symptoms of general mental deficiency. In no case given here has the character of this deficiency been grave enough to place the child definitely on the certifiable list.

(B) One case which was afterwards definitely certified and which was accompanied by complete aphasia.

[1]P. 333-349.

(C) Cases of children and young adults showing a high type of intelligence in whom more or less complete Alexia existed. In the older cases very complete investigations have been made of the patients' visual condition and in each case it has been decided that no form of mechanical help by glasses promised any relief.

The following five cases illustrate the observations made and the methods employed in overcoming the defect.

I (J. R.)—8 years of age sent to the Speech Clinic of a London Hospital as mentally deficient; slight stammer; quite unable to read; clever with his hands; very backward at school. General observation showed a keen intelligent sense of humor, great capacity for remembering commands and even complicated directions; completely reasonable action in all his ordinary proceedings; as the treatment continued he became the monitor of the class and showed quick intelligence in all his duties. At this time (1913) word blindness was generally regarded as giving little promise of results from treatment. J. R.'s inability to distinguish letters was profound. He had picked up some of the names in his school experience, but cheerfully presented Z, W, and D, as hopeful candidates for the letter A.

Before leaving the Clinic he could write quite fairly well, read his own writing without difficulty—this is frequently found in cases in Alexia—he read the names of all objects he was sent to fetch, and even at times was found reading to himself. His case was one of those of which track was lost during the War.

II (E. L.)—8 to 12. This case was charmingly friendly and intelligent, conversed quite sensibly and was able to earn money as a small errand boy, but was found hopeless at school. He read not at all and wrote with a good deal of difficulty, spoke well and drew very much better than most boys of his age. Methods of treatment had developed considerably by this time and E. L. soon learned to recognize all letters, spell words with block letters, read ordinary words, print block letters and write fairly well. He had no love of reading, differing in this from J. R., but he could read ordinary sentences quite intelligently and distinguish addresses, shop signs, etc. He was successful in his work as an errand boy, but did not show great intelligence at any time. He still attends at intervals for revision of his work and maintains progress.

III (A. B.)—One of the older girls at a well-known Girls' public school. A clever artist taking up drawing as a profession, completely word-blind. Wrote fairly well and could generally read what she had written, great care having been expended on her education. She had private lessons and before leaving read practically normally. When last seen she reported that she was hardly troubled at all by her defect.

IV (O. L.)—A somewhat similar case, hampered all her life by word-blindness. She came of a very brilliant family and had been carefully educated by being read to. Her writing was fair but she

found difficulty in reading it. Her word-blindness was practically complete in reading print. She had received particularly accurate optical attention and the case had been pronounced to be purely one of word blindness. She was a most energetic and careful student and followed her exercises conscientiously. There were ultimately no remaining signs of any real difficulty in reading, though her sentence stressing was rather uncertain and slow. She has continued her practice and may be counted as a cure.

V (M. G.)—A young girl of Italian race particularly gifted as a speaker. She is now among the most successful students of a leading dramatic school. She has an excellent verbal memory, and is a remarkably fine verse speaker. When first seen at about 14 years of age she could with difficulty distinguish letters but was quite unable to read words. After over two years' treatment she was able to take her place in ordinary rehearsal classes, reading her parts and learning them very easily from the script. When nervous her reading aloud is still poor and she is unsuccessful in this part of her diction tests. She writes quite well and reads to herself without difficulty.

Among the difficulties which have been met with in the treatment of children attending primary schools the greatest is the fact that they have lost step with their contemporaries in learning to read. The child whose word-blindness has been completely overcome is still in a measure in the same position as the normal child who has just learned to read. The reading vocabulary is small, sentence stress is uncertain, and there is no natural love of reading to induce constant voluntary practice. When these children return to the normal school class, where their contemporaries in age now have no further teaching in reading, they are often reported "to read no better than they did before." What is needed here is a special practice class for such cases, as it is difficult to keep them long enough at clinic to ensure complete fluency, and their own school teachers are better trained in the devices for teaching reading than the majority of clinicians.

Methods of Practice

1. The first exercise given is Blind Reading. Very solid wooden block letters are employed, the child standing with his back to the teacher, a letter is placed in his hand held behind the back. The name of the letter is then given and the peculiarities of the shape described. This is continued without any use of sight until all the letters can be named phonically and alphabetically: "its name is Pee, and it says Puh, etc."

2. The process is repeated while the child draws a rough sign for the letter in the air with the forefinger.

3. The process is repeated but after naming each letter the child looks at it and puts it down in front of him.

4. The child is now asked not to name the letter until *after* he has looked at it, and where this is not successfully done he returns to the blindfold feeling.

5. The child looks at the letter, names it and tests the correctness of his impression by feeling the letter.

6. Block letter drawing is now introduced, and all the impressions are compared and used in haphazard order, e. g., look at it, draw it, name it, feel it, sound it.—Look at it, sound it, draw it, name it, feel it, etc., etc.

7. Very large printed letters are now employed, the child tracing them with his hand held by the teacher, naming them, looking at them, repeating the name.

8. The next stage—word reading—is difficult from the impossibility of obtaining good carved combinations of sounds or raised word blocks, but by this time words printed under a picture as in ordinary reading books, have generally become fairly intelligible, and the order look, speak, copy, write, is found useful.

It should be noted that the first block letter feeling is never given up, as it is obvious that this is the link which re-established connection between the visual impression and the word Motor-Memory.

9. Without giving up the general curative practice, an attempt is now made to teach the child reading in the ordinary way. It is here that the school teacher's help is most valuable; in the case of M. G. mentioned above it was extremely helpful and produced a rapid result.

The facility with which the normal "word-blind" draw is very remarkable. They are generally far above the average of their age and in several instances they have followed the profession of art.

The suggestion left by these studies is that the path to re-establishment of normal conditions lies along a vigorous course of motor training associated with visual and auditive impression. In effect, a strong intensification of one stage in the normal child's approach to learning to read.

A STUDY OF THE STUTTERER'S ABILITY TO INTERRUPT STUTTERING SPASMS

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The purpose of this experiment was to investigate the overt stuttering block in order to determine whether or not it could be terminated at a given signal and whether or not another response (abdominal protrusion) could be enacted as quickly when the signal was given during stuttering spasm as it could during normal speech or silence. Many students of the disorder have pointed out the compulsive nature of the actual blocks, and stutterers themselves frequently express their seeming inability to stop a block once it has been started. Of the fifteen severe stutterers used in this study, eleven testified through questionnaire that they were unable to stop stuttering once it began. Thirteen of them testified that the stuttering block commonly interrupted other activity (especially manual activity), a finding corroborated by the work of Herren.[1] We were primarily interested therefore in determining whether the blocking in stuttering was as prepotent as these observations seemed to indicate, and in comparing cessation reaction times during stuttering spasm with cessation reaction times during silence and free speech.

Although reaction time experiments have been conducted for years, very little has been done with cessation rather than initiation of activity. Perhaps the best study of such cessation reaction times was that of Sollier[2] who demonstrated that the cessation reaction time is always longer and more variable than that involving the initiation of activity, that it is seldom abrupt and that it varies with the task which is interrupted. The usual reaction times for cessation of such tasks as contour drawing, rhythmic performance, and writing from dictation varied from .25 to 1.00 seconds. He pointed out that cessation reaction times are probably more a measure of the dominance or prepotency of a task than of anything else.

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[1]Herren, R. H., "The effect of stuttering on voluntary movement," J. Exper. Psychol., 1931, 14, 289–298.

[2]Sollier, R., "Le temps de reaction a l'arret." J. de Psychol., 1926, 23, 980–1002.

Procedure.—A Sumner pneumograph was placed about the stutterer's waist at the level of the navel. This was connected to the tambour and writing pen of a Renshaw polygraph. The subject was instructed to react to the sound of a buzzer by immediately stopping all speech attempt and protruding his abdomen. A short training period was given to familiarize the subject with the procedure. Signals were given during silent and oral reading and in the latter case during free speech and during stuttering block.

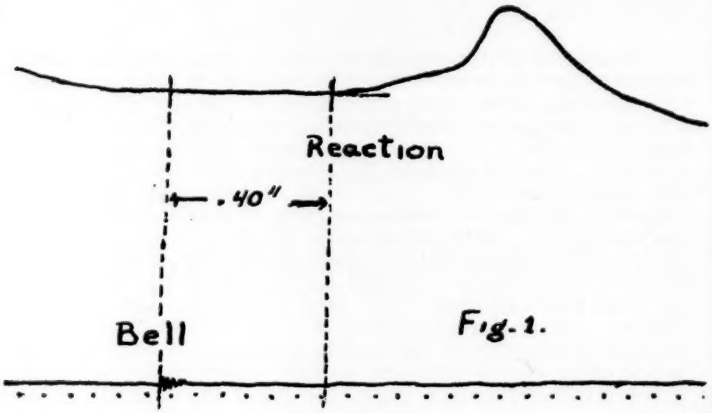

FIG. 1

Fifteen stutterers were used in this experiment and each subject continued the experiment until twenty reaction times during silence, during free speech and during stuttering spasm were obtained. In the latter two categories the stutterer was asked whether or not the buzzer was sounded during actual speech attempt. Analysis of the breathing record provided a further check to insure proper timing of the buzzer signal. Times were measured by means of the polygraph record, a sample of which is shown in Fig. 1.

Results.—The results of this experiment are expressed in Table I.

TABLE I

REACTION TIMES OF ABDOMINAL PROTRUSION TO BUZZER SIGNAL

SUBJECT	SILENCE			NORMAL SPEECH			STUTTERING	
	Av.	S. D.	C. R.	Av.	S. D.	C. R.	Av.	S. D.
Hel.....	.32	.07	5.3	.47	.11	0.54	.49	.13
Lod.....	.36	.10	5.0	.53	.12	0.47	.51	.15
Gre.....	.27	.09	4.8	.44	.13	0.80	.41	.10
McC.....	.33	.14	2.0	.43	.17	0.20	.44	.17
Bra.....	.30	.07	3.2	.38	.09	1.70	.46	.19
Wag.....	.29	.12	2.8	.39	.11	0.45	.41	.17
Mar.....	.34	.09	1.9	.40	.12	0.22	.42	.16
Woo.....	.30	.06	4.8	.43	.11	0.90	.40	.11
Pow.....	.29	.03	5.3	.37	.06	0.00	.37	.08
Obe.....	.23	.10	3.7	.36	.13	0.81	.40	.18
Ken.....	.31	.13	3.8	.49	.17	0.39	.51	.16
Mec.....	.38	.18	3.1	.56	.19	1.07	.50	.17
Joh.....	.26	.09	1.7	.32	.13	0.23	.33	.14
Cha.....	.25	.13	3.3	.37	.10	0.51	.35	.15
Car.....	.29	.11	1.6	.36	.17	0.53	.33	.19

As the table indicates rather clearly, there were no statistically significant differences between the reaction times for abdominal protrusion during normal speech or during stuttering block. With but three exceptions the reaction times during silence were significantly shorter than those during speech or stuttering, a finding which might have been due to the lesser amount of activity requiring interruption. The present experiment demanded both cessation and initiation of reaction, and the times are as variable as Sollier's study above cited tended to show. However, the finding of importance to students of the problem of stuttering is that the compulsive nature of the speech block is not in evidence in this type of activity. Stuttering blocks or spasms may be interrupted as swiftly as may normal speech attempt. It should be pointed out, however, that the reaction was made to a pre-arranged signal and that such a relationship presupposes the existence of specific preparatory sets. In the absence of such a preparatory set, or in the absence of any predetermined signal, the compulsive nature of the stuttering act might be manifest. Nevertheless, the findings indicate that the stutterer has some control over the duration of his spasms and that through the use of a preparatory set he can interrupt them at will.

Summary.—Fifteen stutterers were used in a reaction time experiment to determine whether they could respond to an auditory signal by cessation of speech attempt and abdominal protrusion as quickly during stuttering as during free normal speech, or silence. No differences were found between stuttering and normal speech, but significant differences appeared between silence and normal speech.

PERIODICAL REVIEWS

By CHARLES H. VOELKER
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LES MALADIES DU PHARYNX. By G. CANUYT. Paris: Masson et Cie, Editeurs, pp. 789, 1936, 200 Fr.

This is quite a heavy treatise on the pharynx written in the style usually characteristic of the Germans. It is very comprehensive in itself, giving as it does a resumé of the literature on the subject. Also its extensive bibliographies at the end of each section give many valuable references. The subject naturally divides itself into three parts: *The Buccal Pharynx, The Naso-Pharynx,* and *The Hypopharynx.* In addition to these parts, the author concludes with a discussion of professional responsibility in medico-legal cases. *Part I* (556 pages) is devoted to considerations of *Syphilis, Tuberculosis, Cancer, Tonsilitis, Acute Infections, Dental Infections, Supperations, Paresthesia, Paralysis. Part II* (124 pages) considers the *Adenoids, Cancer,* and *Tumors* of the naso-pharynx. *Part III* (54 pages) discusses *Cancer of the Hypopharynx, Tumors, Foreign Bodies,* and *Hypertrophy of the Lingual Tonsil.* The work is profusely illustrated.

LES ENFANTS QU'IL FAUT READAPTER. By G. DE PARREL and H. HOFFER. Paris: Vigot Freres, pp. 286, 1936, 20 Fr.

The authors have divided their book into four parts. *Part I* describes the special education of the hard of hearing, the deaf with some vestigal hearing, and the profoundly deaf. These training procedures are completely illustrated. *Part II* is called *Children with Defective Comprehension.* It discusses various personality disorders, the feebleminded, and the retarded in school. *Part III* is devoted to speech disorders, such as voice defects, delayed speech, stuttering, and infantile voice. *Part IV* discusses respiratory disorders. The book's greatest value lies in the exercises proposed.

PERSONALITY ADJUSTMENTS OF ADOLESCENT BOYS WITH IMPAIRED HEARING. By S. Habbe. New York: Teachers College, Columbia University, Contributions to Education No. 697, pp. 85, 1936, $1.60.

Habbe found that the speech of the hard of hearing tended to be defective and that facilities for the correction of their speech should be extended. Apparently there is no need to consider a separate educational system for them. Personality maladjustments among the hard of hearing tend to increase with age. A well adjusted hard of hearing person will probably not exhibit speech difficulties and will probably welcome remedial instruction for his hearing disability, regardless of age, or degree of hearing acuity.

PROGNOSIS OF STUTTERING

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There are so many theories of the etiology of stuttering that a modern speech clinician scarcely has time to become oriented to a carefully worked out philosophy of each one. The result is that he, like his older colleagues, settles down to a single approach and operates his clinic according to the theory which best suits his fancies, beliefs, and experiences.

We have listened to two approaches to the problem, and I am to discuss the prognosis, having no particular leaning in the direction of either theory expressed. Consequently I don't know the prognosis which should logically follow Drs. Solomon and Kenyon.

My conviction for the present prompts me to discuss the prognosis of another point of view, the one which my researches and experiences in clinical practice have led me to have at least some faith in.

There are three main considerations to the problem of the etiology of stuttering in which I should like to engage your attention.

One. Dysintegration of the central nervous system expressed in neurologic spasms of subcortical origin, causing clonic and tonic blocks on the peripheral organs of speech. This state of neurologic confusion I may consider as being primary in that I believe it to be the first condition of stuttering.

Two. Secondary evolvement of unwholesome personality reactions, excessive and unnecessary muscular movements of the speech muscles and body in general.

Three. Social maladaptation, revealing itself in morbidity, sensitivity, fear, and asocial conduct.

The question of prognosis of stuttering patients must be discussed from two points of view—the child whose experience with stuttering has been brief, the adult whose stuttering experience has persisted through the years with disastrous effects on the thought, emotion, and general behavior of the patient.

In the first place, 40% of stuttering children need not worry a clinician because before the age of eight, through general cerebral maturation assisted by developmental factors in the environment, stuttering subsides. In a few of these individuals there appears to be but slight remnants of an earlier severe type of stuttering. But the bugaboo is, how is a clinician going to know which patient is going to end his sojourn as a stutterer at the age of eight. It is not predictable.

The least one can say is that a speech clinician managing young stutterers ought to have a favorable prognosis in 40% of his cases.

After fifteen years of experience with some 5,000 stutterers, I am forced to say that an absolute cure in adult patients is very rare. By absolute cure I would mean the elimination of all symptoms, fear, sensitivity, habit patterns, avoidance and postponement devices, psychologic and physiologic crutches, the short rapid neurologic spasm, all of which the adult stutterer has fallen heir to.

One is not surprised at this hopeless picture when one envisages the seriousness of this disorder in adults. The experience of stuttering has not only more deeply imbedded the original neurologic pattern, disintegrated as it probably was in the beginning, but habit patterns and emotional adjustments have likewise been preserved behind a host of ruses, masks, and ingenious hiding devices to soften the scourge and allay the fear of stuttering. Yes, stereotype habit patterns and behavior reactions not only are inevitable in a person whose journey is constantly frustrated by exploiting and ravishing social and communicative situations, but are also extremely difficult to manage, uproot, and salvage in clinical procedures.

The more hopeful outlook for adult patients is that of setting up goals for improvement in their speech and personality. For after all a person need not necessarily think of himself as inefficient and inadequate because his speech patterns do not approximate the smoothness and synthesis of the speech of others. He rises or falls in relation to his point of view of himself as a stutterer.

Just what can be done along this line. The so-called secondary reactions already alluded to, which the stutterer has attached to his original primary neurologic spasms, can be eliminated. This can be done to the point where for all practical purposes his speech and emotional adjustments will serve him well in social and professional situations.

On the average this program takes about three months. The prognosis for *improvement* in the stuttering person is more hopeful, if the patient possesses the following qualities:

1. Sufficient intelligence to gain adequate insight into the goals and practices in clinical procedure.

2. A degree of determination which so few people possess. It means sticking to a task unmolested by ordinary diversions of the clinic or society at large.

3. Self-discipline in fulfilling the requisites essential in the performance of duties which oft times are unpleasant and very difficult.

Lastly, it is essential for a good prognosis to be effective, that the patient is not held back by disturbing and non-co-operative factors in the home and school. Daily assignments must be carried out in the home and school as well as in the clinic.

If these qualities are present in the patient, we can feel more certain that when bad habits of adjustment have been altered, when

secondary involvements have been minimized, and when the emotional and psychologic "under brush" has been cleared, a more integrated functioning of cortical dominance is more likely to obtain.

With the young stutterer we have a more hopeful prognosis. We deal here for the most part with stuttering in the "raw." The primary neurologic spasm is our most important consideration. Here, too, we have the help of nature, who so graciously manages 40% of our patients into free speech.

Speech Pathologists know more about the development of stuttering and its dire consequences than about its etiology. The human organism is so complex that although man has studied stuttering for many centuries he is still baffled as to its origin. However, before closing I should mention a few considerations in the prognosis of young stutterers.

Speech rehabilitation in a comparatively short time is dependent on

1. Physical health and care in general.
2. A wholesome mental and emotional environment.
3. Average intelligence.
4. The setting up in the brain of the co-ordinating faculty for easy, unimpeded motor facility by attending to all the factors relevant to inherent stock-brainedness, unilaterality of nervous organization, and the correlated factors of peripheral handedness.

Any environmental factor, whether physical or emotional, which operates against the establishment of a unified hierarchic motor control of the cortex over its substructures, is unfavorable to a good prognosis.

A young stutterer's environment can be so managed as to give his organism every possible chance of functioning in an integrated fashion which will fulfill the major requirement in his speech rehabilitation.

1938 MEMBERSHIP LIST ADDENDA

(A) BEIRNE, HONORA CATHERINE, S.B. in Ed. (St. Joseph's Coll. for Women) 1936. Special T. in charge of hard-of-hearing children, Everett and Waltham Pub. Sch. 17 Bacon Street, Waltham, Mass.

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